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CONTENTS.

An Asterisk (*) denotes an illustrated article.

OFFICIAL NOTICE—

Twenty-fourth Annual Meeting, Western Gas Association..... 601

EDITORIALS—

Briefly Told..... 602

Death of Mr. Robt. W. Pratt—Notes.

Proceedings, Seventeenth Annual Meeting, Ohio Gas Light Association—Continued from page 571..... 602

Second Day, Afternoon Session—* Business Outside the Usual Channel, by Mr. F. W. Stone—Discussion—* The Wrinkles—Discussion.

By-Product Coke Ovens or Improved Coal Gas Works for a City Supply—A Comparison, by Mr. Frederic Egner..... 610

Gas: Its Uses in India, by Mr. George Cecil..... 611

Magnetic Testing of Oxidized Iron..... 612

Oil for Streets..... 613

ITEMS OF INTEREST FROM VARIOUS LOCALITIES..... 613

Mr. W. H. Frapwell Goes to Meridian, Miss.—Chicago Office, Maryland Meter and Mfg. Co.—Annual Meeting, Bangor, Pa.—Cheaper Gas for Elmira, N. Y.—Contract for the Western Gas Construction Company—A Hint from Tampa, Fla.—Sale of the Mattoon (Ills.) Plant—A Hint from Kenosha, Wis.—Chelsea (Mass.) Authorities Want Cheaper Gas—The Ashtabula (O.) Company's Idea of Advertising—Something from Hampton Roads, Va.—Anent Advertising Gas for Sale—Mr. B. C. Cobb to Take Charge at Saginaw, Mich.—Gas for South Milwaukee, Wis.—Mr. W. E. Osborne in Control at Nevada City, Cal.—Annual Meeting, Rome, N. Y.—Consolidation at Selma, Cal.—Contract for American Bridge Company—And Other Items.

Labor Troubles in the English Coal Trade..... 614

The Market for Gas Securities..... 615

[OFFICIAL NOTICE.]

Twenty-fourth Annual Meeting, Western Gas Association.

WESTERN GAS ASSOCIATION,
OFFICE OF THE SECRETARY,
NEW ALBANY, IND., April 8, 1901.

To the Members of the Western Gas Association: The 24th annual meeting of the Western Gas Association will be held in Louisville, Ky., May 15, 16 and 17, 1901, and will be called to order by the President, Mr. Ira C. Copley, of Aurora, Ills., at 9:30 A.M., Wednesday, May 15th.

The Galt House has been selected as headquarters, and the meetings will be held in a suitable room contained therein. The following rates have been obtained: European plan, $1.50 to $2 per day; American plan, $3 per day. Rooms with bath, from 50 cents to $2 per day, according to location. The Louisville Hotel offers similar rates. Sealbach's Hotel, European plan, $1 per day.

The Executive Committee has arranged for the presentation of the following papers:

"Recuperative Furnaces of To-day: Directions for Operating and Testing;" by Mr. W. E. Steinwedell, Belleville, Ills.

"Six Months' Experience in the Operation of Inclined Retorts;" by Mr. A. H. Barret, Louisville, Ky.

"Taxation of Gas Companies;" by Mr. George McLean, Dubuque, Ia.

"Method of Keeping Prepayment Meter Accounts;" by Mr. Ernest Wm. Bell, St. Louis, Mo.

"Gas Association Libraries;" by Mr. F. H. Shelton, Phila., Pa.

"A Stormy Experience;" by Mr. John Gimper, Galveston, Tex.

"Gas and Hygiene;" by Mr. James Ferrier, Columbus, Ga.

"Wrinkle Department;" edited by Mr. F. H. Shelton, Phila., Pa.

"A "Short Topic" on the subject of "Isolated Generators for Bench Firing;" by Mr. Henry L. Doherty, Denver, Col.

Reports will be received from the Conference Committees on "Municipal Ownership" and the "National Bureau of Advertising."

The Western Passenger Association (from points in Eastern and trans-Missouri territories), the Central Passenger Association, the Trunk Line Association and the Southeastern Passenger Association have granted rates of 1 and ⅓ fare for the round trip, conditional on 100 certificates being presented to the Secretary for indorsement. The territory embraced by the above Associations includes all States east of the Mississippi river, except New England. The following States and Territories west of the Mississippi river are in the territory covered by the Railway Association granting reductions: North Dakota, South Dakota, Minnesota, Wisconsin, Iowa, Missouri, Nebraska, Kansas, Oklahoma, Indian Territory, Colorado and Utah.

All persons attending the meeting will purchase a first-class ticket at starting point, paying full fare for same, obtaining from agent a certificate stating that the person whose signature appears on same has purchased, at full tariff fare, 1 first class ticket to Louisville, which certificate, after it has been signed by the Secretary of the Association, and a representative of the above Passenger Associations, will entitle the purchaser to a ⅓ rate returning home.

Apply to ticket agent at least 30 minutes before departure of train. All station agents do not have a supply of certificates, but they can be obtained by request, if notification is made in time. Persons outside the territory embraced by Passenger Associations mentioned above should purchase a ticket to nearest point within one of said Association, and from there purchase a ticket to Louisville, obtaining a certificate, which will, if properly indorsed in Louisville, entitle them to ⅓ fare returning to place from which certificate was obtained, provided it is indorsed by a representative of the Passenger Associations (who will be present at the meeting) and the undersigned.

Those who live in Western Passenger Association territory should consult local agent several days in advance of purchasing ticket to Louisville, in order to reach an understanding with the different roads as to the junction point via which they will make rates applicable. Some local agents sell to junction points, where delegates can re-buy to destination. Certificates held by wives of the delegates attending the meeting will be honored in the same manner as those held by the delegates themselves.

Tickets can be purchased under the above arrangement on or after May 11th, and are good, returning from Louisville, on or before May 21st.

A banquet, to be provided by the Association, will be held Thursday evening, May 16, at the Galt House, tickets for which will be sold at $5 each. As it is necessary that arrangements for this banquet should be perfected at an early date, it is requested that those who expect to attend the meeting will notify the Secretary as early as possible of the number of tickets they will require. While the ladies will not participate in the banquet, ample arrangements will be made for their entertainment.

The calling of the roll this year will be omitted. Every member attending will deposit, upon entering the meeting room, a special card

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APR 22 1901

which will be furnished him, and upon which he will write his name and address.

For the first time we are to meet in a city where the local gas company has in successful operation inclined retorts, which fact alone will be instructive and add to the interest of the meeting.

All queries sent to the Secretary for the Question Box will be assigned, in advance of the meeting, to members for answer.

The Secretary will be pleased to answer any communication pertaining to the meeting, and will mail blank applications to any who desire to become members of the Association. JAS. W. DUNBAR, Secretary.

BRIEFLY TOLD.

DEATH OF MR. ROBERT W. PRATT.—We regret to have to report the death of Mr. Robert W. Pratt, who died at his home in Waban, Mass., the morning of the 10th inst. Deceased who was born in Boston, Mass., February 9th, 1851, was the son of Mr. John C. Pratt, who will be remembered in Eastern gas circles from his active and lengthy connection with the Jamaica Plain (Mass.) Gas Light Company, over which concern he presided for many years. Deceased was Treasurer of the Jamaica Plain Company for several terms, relinquishing that position when it was purchased by the parties now mainly in control of the Boston gas situation. He is survived by two sons.

NOTES.—Write to "Governor" S. F. Hayward, 395 Broadway, N. Y., for a copy of his latest brochure, which carries as its title "Gas Chat." It is a very "purifying work."——The Connecticut Senate has assented to the incorporation of the South Shore Gas and Electric Company, of Stonington.——The consolidated gas and electric enterprises of Cincinnati, O., are to be known under the corporate title of the Cincinnati Gas and Electric Company.——The proprietors of the New Britain (Conn.) Gas Company have determined to reduce the selling rates, the concessions to date from July 1st. Under the new schedule the prices will be: Gross, $1.50 per 1,000; net, $1.40. The Company will make a good addition to its distributing lines this summer.——As was intimated in the JOURNAL some time ago, local capitalists, headed by Mr. H. H. Palmer, have purchased the property and franchises of the Geneva (N. Y.) Gas Company, the ownership of which heretofore was held by residents of Portland, Me.——The new owners of the Mattoon (Ills.) Gas Light and Coke Company have perfected the following executive organization: President, E. A. Potter, of Chicago; Vice-President, H. A. Mykrantz, Ashland, O.; Secretary, E. M. Lampsel, Chicago; Treasurer, L. G. Locum, Chicago. Messrs. E. C. Craig and George S. Richmond, of Mattoon, retain their interest in the Company. The proprietors propose to make extensive betterments on the property, the larger portion of the expenditure going in the line of main extensions.——Messrs. W. K. Sharpe and I. C. Elder have secured control of the Chambersburg (Pa.) Gas Company. The works are to be rebuilt and the main system is to be extended. We understand that par was paid for the purchase.——The Portland (Me.) Gas Light Company has arranged for the placing of its mains through the territory (now a part of the city of Portland) known as the "Deering Wards." The output of the Portland Company in 1900 amounted to 96,183,000 cubic feet; in 1890 the output was 57,622,000 cubic feet. Under the conditions it is needless to say that Chief Yorke and his associates are not in the least on the pessimistic order. The Portland Company will put a lot of money in pipe extensions this season.——The following is the text of a measure now before the Pennsylvania Legislature, which seeks to put a tax on the business of artificial gas companies: "That from and after the passing of this act every corporation, joint stock association, limited partnership and company whatsoever engaged in the manufacture and sale of artificial gas for heating, lighting or other purpose, shall be subject to and pay into the Treasury of the Commonwealth annually a tax at the rate of 5 mills upon a dollar of actual value of its whole capital stock of all kinds, including common, special and preferred, as ascertained in the manner provided by laws for the ascertainment of the actual value of capital stock of other corporations, joint stock associations, limited partnerships, etc., paying a capital stock tax, and it shall be the duty of the treasurer or other officers having charge of any such corporation, joint stock association or limited partnership, upon which a tax is imposed by this act, to transmit the amount of said tax to the Treasury of the Commonwealth within 30 days from the date of settlement of account of the Auditor General and State Treasurer, provided that for the purposes of this act interests in limited partnerships or joint stock associations shall be deemed to be capital stock and taxable accordingly."

[Continued from Page 571.]

PROCEEDINGS, SEVENTEENTH ANNUAL MEETING, OHIO GAS LIGHT ASSOCIATION.

HELD IN DAYTON, O., MARCH 20 AND 21, 1901.

SECOND DAY, MARCH 21—AFTERNOON SESSION.

The Association reconvened pursuant to adjournment, and the President introduced Mr. F. W. Stone, of Ashtabula, O., who read the following paper on

BUSINESS OUTSIDE THE USUAL CHANNEL.

In January the writer read an article in one of the leading periodicals of the United States, describing the house that was to be built in 1950. The house described had all the conveniences, and was just such a house as every gas man ought to occupy; yet if that was the case the gas man's goose was, in more senses than one, electrically cooked, because in all that house they had no use for gas, not even in the kitchen.

I do not believe that the article as written is a true representation of the possibilities, but the public press and exhibitions are constantly putting forward electricity and its advantages and the improvements made in that line. The oil interests are actively engaged in pushing forward the various forms of vapor incandescent lights. There is also a growing demand for cheaper gas. All these things will undoubtedly affect our business. We are now selling more and better gas than ever before, and shall continue to do so, as the past history of the gas business teaches us that competition only stimulates us to better work and the discovering of newer and better methods of manufacture and use.

The use of gas for industrial purposes offers a great field for future development. We have tried this field in the installation of gas engines, but have been checked somewhat by the high price of the engine, the fact that a rate of 60 cents per 1,000 cubic feet must be made to compete at equal cost with gasoline, and the disposition on the part of some manufacturers to push the sales of gasoline engines as against gas. It is to be hoped that these objections can be overcome.

The common peanut warmer outside the fruit store can be arranged to use gas, and become a consumer of from 3,000 to 5,000 feet per month. If this same consumer can now be induced to have his peanut roaster fitted up to use gas, he will add about another 5,000 feet to his bill. If, in addition to this, he has a room for ripening bananas, and you can persuade him to use gas for heating it, you can get another bill for about 5,000 cubic feet. For all these purposes gas is an ideal fuel. The heating is easily regulated, and the cost low. Its only competitor is gasoline.

A great many grocery stores now roast their own coffee. It is not very expensive, 45 pounds of coffee being roasted in about 50 minutes, with a consumption of about 65 cubic feet of gas. The writer has one grocery that uses over 4,000 cubic feet of gas per month for this purpose alone.

You are all familiar with the ordinary blast gasoline furnace used for heating soldering irons in a tinner's shop. They roar so loud that the men at work can hardly hear themselves think. Sometimes they blow up. And they consume about 1 gallon of gasoline per day of about 10 hours. The writer had a great deal of difficulty in getting a soldering iron furnace using gas as fuel that was a success, but they are now made to do good work. A furnace consuming about 8 cubic feet of gas per hour will heat a set of 4 pound irons just a little faster than a tinner can use them. This is cheaper than gasoline—no noise or danger; and, in the case of a firm doing job work, no lost time waiting for the gasoline generator to warm up.

We have not as yet reached the point where we can successfully use gas as fuel for generating steam in a boiler, except in cases of small boilers where they are used intermittently, and where the convenience is enough greater to warrant the consumer in paying the extra expense. It is to be presumed that you are all familiar with the use of gas as fuel in ceramic kilns, pure water stills, and blowpipes for brazing bicycle frames and other purposes.

In the field of specially applied brazing furnaces and forges there seems to be a great opening for the gas business. It is, however, difficult to give comparative costs, owing to the seeming great variation between the theoretical value of fuel used for these purposes and the actual results obtained. Each furnace or forge seems to be a law unto itself. In the writer's experience for this work, the average seems to be that 2,000 cubic feet of coal gas is equal to from 12 to 16 gallons of fuel oil, or from 300 to 500 pounds of coke. The economy,

however, comes from the greater amount of work that a man can do with gas.

A furnace arranged for brazing ferrules showed the foliowing comparative results per day's work :

Wages, man and helper	$4.00
400 pounds of crushed coke	.80
Extra help, wheeling coke and ashes, estimated	.20
	$5.00

Results : 2,500 ferrules brazed ; cost per ferrule, 2-10.

With Gas—

Wages	$4.00
2,000 cubic feet of gas, at 75 cents	1.50
	$5 50

Results : 3,300 ferrules brazed ; cost 16-100 of a cent each. The number of defective ferrules made in a gas furnace was not 10 per cent. of the number in a coke fire. This same furnace consumed 16 gallons of fuel oil for the same work.

The furnace for brazing ferrules was made after the pattern of the forge shown in Fig. 3 ; the gas and air being mixed, and entering at one end into the combustion chamber of the furnace, the heat then passes up through the openings in the firebrick top. The ferrules are placed over the openings.

A forge equipped for heating small steel blanks for drop forgings showed the following results :

Wages	$4.00
500 pounds crushed coke	1.00
Extra help	.20
	$5.20

Results : 2,000 forgings ; cost 26-100 of a cent each.

With Gas—

Wages	$4.00
1,700 cu. ft. of coal gas at 75 cents per 1,000	1.28
	$5 28

Results : 2,700 forgings ; cost 19-100 of a cent each.

This forge consumed 14 gallons of fuel oil for the same work. In addition to the economy of operating, a gas fire is better than a coke fire, because the heat can be so adjusted that it is impossible for the workmen to burn the steel.

Figures 1 and 2 show single and double forges for heating the ends

Fig. 1.—Single Forge for Heating Ends of Blanks for Forging and Welding.

of the irons for drop forging or welding. In this case the combustion chamber is at the bottom, and the heat is passed out through the side at the top. The ends of the irons to be heated project into the flame. In the case of small blanks for drop forgings this is reversed, the flame entering the side at the top, and playing upon and completely enveloping the blanks, which are placed on a firebrick slab in the bottom.

The furnace shown in Fig. 4 was designed to heat sheets of perforated metal or other flat pieces of metal for shaping. The flame enters the

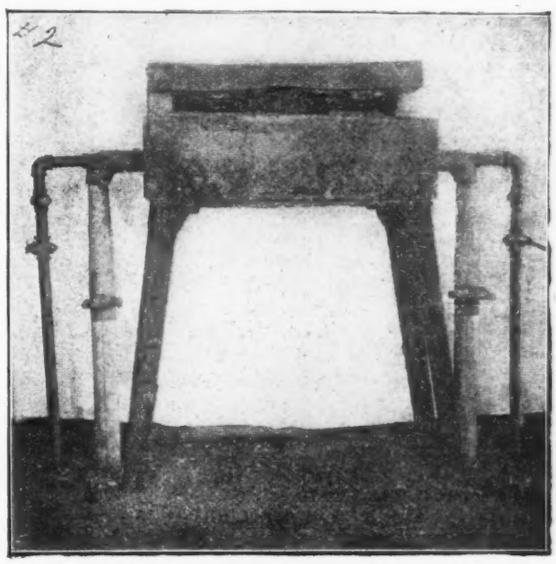


Fig. 2.—Double Forge for Heating Ends of Blanks for Drop Forging.

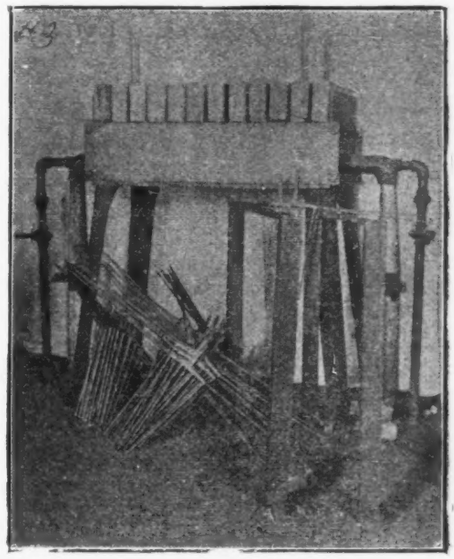


Fig. 3.—Forge for Heating Butts of Forks for Shaping.

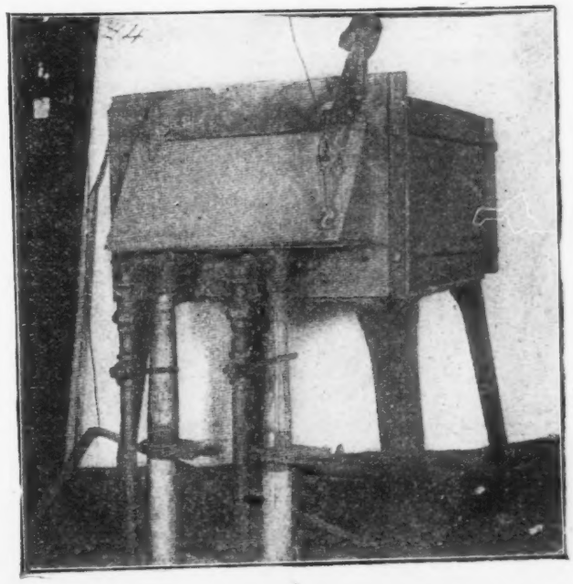


Fig. 4.—Forge or Heating Perforated Sheets, etc., for Bending and Shaping.

bottom at the front, and is spread out in a thin sheet all under the work, returns back over the top of the work, and the products of combustion escape through the top of the furnace.

At the quoted prices for gas, there is no economy in operation obtained by substituting gas for fuel oil, but there is considerable difference in the cost of installation. A fuel oil plant requires tanks for storage of the oil, an air compressor or high pressure blower to maintain the required pressure, and other expensive machinery. It is also almost necessary to have a man look after the plant. In the installation of a gas forge it is only necessary to have a good supply of gas of even pressure, and a strong, steady air blast. While a positive blower is the best, yet a Sturtevant or other fan, that will maintain an air blast of 4 ounces pressure or more, will work satisfactorily, and in some cases a pressure of less than 4 ounces will give very good results. The burner should be so constructed as to give the best possible mixture of air and gas. The size of the forge or furnace used should be as small as can be made, and still heat satisfactorily the articles required. The consumption of gas increases very rapidly in proportion to the size of the furnace used, and it will usually be found that the best economy is obtained by heating a small number of blanks rapidly rather than to spread the flame and try to heat a larger number. A gas forge or furnace to be a success must also be designed especially for the particular size, kind or class of work desired. So far, gas forges are not a success when intended to be used on all classes and sizes of work.

Some authorities have stated that it was impossible to make a good weld with iron or steel heated by coal gas, on account of a deposit of magnetic oxide scale on the metal. This may be true for large pieces,

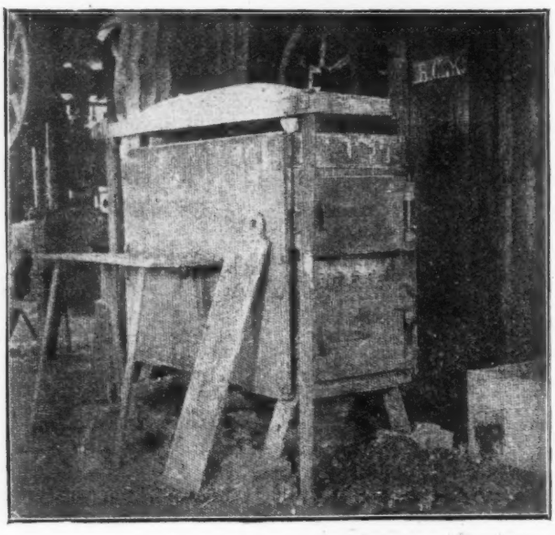


Fig. 5.—If you can't sell Gas sell Gas Coke—Gas Coke Furnace for Heating Heavy Forgings.

but the writer has found no difficulty in making a strong and satis factory weld on bars up to a ½ inch in diameter.

While economy in consumption is to be desired, yet the chief advantage of the use of gas in industrial purposes is the large saving of time. A workman can in almost all cases do from ⅓ to ½ more work with a gas fire than with any other. The ability to control the heat is also quite an item, as some mechanical operations require that the temperature be adjusted very closely.

The writer is not satisfied but that better results than those indicated can be attained. Undoubtedly in the future, improvements in the methods of constructing burners and the appliances for using gas will be made, and it is hoped that the next few years will see a great advance in the use of gas for the purposes outlined. It is impossible within the limits of a paper of this kind to go thoroughly into the subject.

In addition to the uses which have already been enumerated, gas may be used for tempering and hardening dies and tools for rivet heating, for melting metal, for candy boiling, for heating enameling ovens, and ventilating rooms. If the writer can provoke an interest along this line, the object of the paper will be achieved.

Discussion.

The President asked Mr. Perkins to open the discussion.

Mr. Perkins—I concur in the remarks of the writer. Gas is used by us for similar purposes to those mentioned by Mr. Stone, such as ripening bananas, peanut roasting, etc. It is also used largely in a mechanical way, and we are putting forth our best endeavors to extend its uses for such purposes along all lines. It is simply a matter of ingenuity on the part of the men charged with the duty of adapting it to these various purposes.

Mr. Andrews—This subject is one of very great interest to us especially in view of the stand taken by Mr. Stone yesterday, with reference to the matter of gas stoves, that there were other methods of increasing the consumption of gas besides giving away stoves. I have had much experience in our city in the use of gas for soldering in tin can manufacturing. A large plant of that sort uses as high as 20,000 feet every day when they are busy, in soldering tin cans, and for such other purposes to which they can put it. This field has really just been entered upon when you consider that in all our cities there are a great many forges and shops of that kind where tempering is done in which gas can be used to very great advantage, if the methods are presented to them in the proper way, so that they can see the practical results and efficiency to be obtained from its use. A few more papers on this line, giving striking examples of how people do things in this way, I think would be of great advantage to us.

Mr. Olds—This paper interests me greatly, for we have not made much of an effort towards securing consumers for gas for fuel purposes except for use in the gas ranges. Right close to our works is a very large caramel factory, but unfortunately for us, I think they use electricity for such purposes. This paper, however, furnishes us all with many very good ideas, which may be of advantage to us some day.

Mr. Clapp—I have had some experience in trying outside the usual channel to secure consumption in our various factories. The gasoline machine in a large bicycle works in our city either blew up or burnt up, and they needed something to go on with their work. It was right in the midst of their busy season and they called on me to see what I could do with reference to furnishing gas. We made an arrangement to supply them, and to day we are furnishing them nearly 40.000 feet of gas per month for soldering, enameling and brazing purposes. Everything they do in that line is now being done with artificial gas. Mr. Stone spoke of peanut roasters, bakeries, etc. We have attempted to utilize gas along these lines. I cannot call to mind all the new devices, but there are many, and a great many others yet to be will all prove of profit to us.

Mr. Somerville—I think the paper just read is a complete answer to the pessimistic business we heard about yesterday. The speaker mentions the subject of ventilation, and I wish to mention a matter that occurred a few weeks ago. A minister complained about the ventilation in his church. Some people went to sleep during his sermons. He could not keep them awake, and asked me if I could suggest any way of ventilating the room. I told him I thought I could. I constructed a little contrivance that I put in the ceiling, something that looked like one of those sunlights, and then placed an arrangement so that it would cause a draught. In that apparatus I put two jets of gas, which, of course, rarefied the air and made a complete draught. He was perfectly pleased with it. The vacuum, of course, created a current and brought up the foul air into the open air. A draught occurred all the time. One of the public school commissioners spoke to me about it, and asked me whether such a contrivance could be put into the public schools. I said there was no difficulty at all, and I believe that was the very best arrangement to secure ventilation in buildings of that sort. I have an idea that this little thing—which might be perhaps more perfectly planned than I arranged it—could be introduced in the public school system of this city. It is very inexpensive. It is only lighted up a little while before the congregation comes in, and, of course, if it does good work in the church it will do equally as well in a public hall, or school building, or like places. I happened to think about it as the speaker mentioned the subject of ventilation, and I throw out the suggestion for what it is worth. Of course, it increases the consumption of gas so much, and in that way will be of profit and advantage to us.

Gen. Harbison—That thought of ventilation is a practical one and is only another illustration, I apprehend, of the benevolence of the gas men. Why, Mr. Somerville with his inventive genius has certainly given the clergyman of that church $1,000 or $2,000 a year more salary, because the people have been able to keep awake—not because of the dullness of the sermon, but of difference in the atmosphere of the room. The sermon heretofore has not been appreciated, but the congregation now will say that he is preaching so much better than he did before that they must increase his salary or they will lose him. Now, Mr. President, the gentlemen who read papers to this Association, and who have discovered and alluded to a good thing which they have found

from practical experience to be of value to them, why will they not be kind enough to give us the name of the article and the maker of it, that we may take advantage of it also? Mr. Stone tells us in his paper about a soldering furnace that he has found to be of great practical value to those who have used it. How in the world are we in Connecticut going to know whose furnace that is unless he tells us? If he had gone one step further and in the kindness of his heart had told us whose furuace it was, where it could be procured and at what cost, he would not have fallen short in furnishing the information the other members of this Association much needed in order to avail themselves of similar devices? This is what we are here for, to get this practical information and profit by it when we go home. I would like to know what furnace that is. One thought further. Has anyone here had any experience in his own blacksmith shops in the use of gas instead of coal? Can we not devise a means whereby gas may be utilized in the blacksmith shop so that we can compete with coal? It is a continuous operation, 10 hours a day, for 312 or 313 days a year, omitting holi days, and we are getting to have the latter very rapidly for everybody but the gas manager, who never has a holiday, of course. Has anything been accomplished in that line? Who knows about it, if there is such a thing? Who can tell us how we may get one, so that we can put it into practical working?

Mr. Stone—Replying to General Harbison, the gas soldering furnace I am now using I got from the Milwaukee Gas Stove Company. I did not mention it in the paper, because I did not wish to advertise any particular make or firm. However, that one proved the most satisfactory, as far as we were concerned. As far as a furnace for ordinary blacksmith work is concerned, I hardly think you will find gas practical for it on account of the inabitity to heat the iron economi cally. That is, you would have to make a furnace so large to handle your large work that when you came to handle small work you would be wasting too much gas. In order to make a gas heating furnace for forging I suppose you want to have it as small as you can get it for the work you are going to do. If you are going to heat a given sized iron right along you could build a gas furnace securing very satis factory results, but if you have to work upon different sized iron, I think that would be a difficulty which you would encounter.

Gen. Harbison—Would not that difficulty be overcome by having two forges, one for small and one for large work? Again, could not these furnaces be introduced into the blacksmith shops over the city and in that way largely increase the consumption of gas? The party who makes this particular soldering furnace noted by Mr. Stone should be ashamed of himself for not already having informed the gas industries of its existence and what can be accomplished with it. Why do they not publish the fact and advertise it so that we will know what it is and where it can be obtained and what it is expected to do? That brings in, incidentally, the scheme of advertising which was mentioned heretofore in this meeting. Why don't these manufacturers, who are making their living by the manufacture of devices which use gas as a fuel, let the public know where they can get these devices, what they are doing and what they are designed to accomplish, just as the patent medicine man is advertising his medicines, etc.

Mr. Coombs—We have had many interesting and valuable papers read at this convention, and this, to my mind, is especially one of the finest. On page 8, Mr. Stone says: "A gas forge or furnace to be a success must also be designed especially for the particular size, kind or class of work desired. So far gas forges are not a success when intended to be used on all sizes and classes of work." Now in his illustrations, from one to five, he did not give us any information as to who designed these furnaces and where plans for their construction may be obtained. What I would like to ask him is, who designed these furnaces? Did Mr. Stone have to invent or construct these forges for this purpose?

Mr. Stone—We make all of our forges. The ones illustrated in the paper were put together by the foreman of the forge room and myself. He stated about what kind of work he wanted to do and what he expected to do with it, and together we planned and built the forge. We tried it and if it was unsuccessful at first we studied out where we could make a change to improve it, changing it around until we got something that would do the work with the least possible cost as we thought.

Mr. Coombs—That shows that the gas man has to be in contact with the consumer in helping along the use of gas in the most satisfactory manner.

Mr. J. R. Lynn—Apparently there seems to be a very wide difference between the efficiency of gas and coke used for the same purposes. I would like to have that explained. From 500 pounds of crushed coke he gets 2,000 forgings, while from 1,700 cubic feet of gas he obtains 2,700. If the efficiency in the two instances were equal, 500 pounds of coke would be equal to 4,000 cubic feet of gas.

Mr. Stone—The illustrations as to efficiency were taken from actual practice. Before we went into the business the man wanted to know if we were going to pay him to do it. We weighed the coke that the furnaces used for a given period and made a tabulation of the result obtained. A man loses time when he is working on small forges on a coke fire, because he has to replenish his fuel once in a while. We had another man keep tab on the men as they filled the fires and waited for them to burn up to a bright fire again or to a heat sufficient to heat the forges, and found that a man wasted almost one-third of his time keeping his fires in trim. That gives an increased number of forgings with gas over those which can be obtained with coke. As far as the efficiency of gas and coke is concerned, I cannot attempt to explain it; possibly more heat was wasted, as the coke fire was open at the top; whereas we confined the heat from the gas fire right on the work.

On motion of Mr. Andrews a vote of thanks was tendered Mr. Stone.

THE WRINKLES.

The President—In the absence of Mr. Henry L. Doherty, Editor of the Wrinkle Department, Mr. Butterworth, of Columbus, has very kindly consenteed to read them.

Mr. Butterworth read as follows:

DENVER, COL., March 1st, 1901.

Mr. President and Members of the Ohio Gas Light Association—Gentlemen: I believe I was guilty of suggesting that the Ohio Gas Light Association inaugurate a Wrinkle Department. I did this, believing it would add much to the attactiveness of our meetings, and would bring out many wrinkles that never could be secured by the other Associations. When I accepted the editorship of this department, I did so believing that I would have ample time to give the matter serious consideration, and as I have, heretofore, been compelled more or less to visit many gas works, I thought I might be able to pick up some very interesting wrinkles. Shortly after my appointment I unfortunately became so busy with other matters, and have traveled so little of late, that I have not been able to give the matter the attention it deserved.

I offer you, at this meeting, a few wrinkles, which I hope may prove of assistance to many of the members, but I am far from satisfied with the effort. I hope the members will regard it simply as an attempt to establish the department, rather than as a sample of what may be expected from this department after it is in full running order.

I shall not be able to give this department the attention it deserves, and if some suitable member of the Association will take up this work, I think, with proper enthusiasm and liberal assistance from the other members, it can be made at least as valuable as any other portion of our proceedings. I want to impress on the mind of the members of this Association that they must remember that the Editor of the wrinkle department is simply the Editor, and that he must not be expected to first manufacture the wrinkles and then edit them.

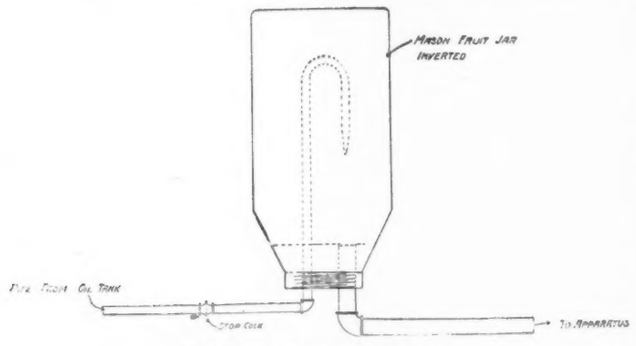
I have not had time to solicit wrinkles from the various members of the Association, neither have I had time to look over the wrinkles heretofore published by the other Associations to prevent repetition. Many of the members of the Association know how handicapped I have been for the past year, and if this department fails to meet your expectations, I hope none will jump at the conclusion that it is impossible for our Association to properly edit a department of this sort.

I wish to acknowledge the help of Mr. W. A. Baehr, of Denver, in assisting the Editor.

Wrinkle No. 1.[1]—Author unknown; purpose, a cheap and durable sight-feed for oil gasified for an enricher for coal gas.

Description—It is simply an inverted Mason fruit jar, with an inlet and outlet pipe passing through the screw cover, and the inlet bent in the form of a gooseneck, so the operator can tell at a glance whether the oil has ceased to feed or the rate of flow has changed. Glass must be used for sight-feeds for all volatile liquids, and it is usually customary to use a glass tube, connected at top and bottom to metal pipes. Two connections are hard to make to glass, and a strain is apt to be introduced which will break the glass before the job is completed, or will subsequently cause the glass to fracture by expansion or contraction of the metal connecting pipes. I have also used instead of the Mason jar, a Lungren lamp globe, made tight by a seal of mercury contained in an annular cup.

1. It has beeu in use for several years, and I remember seeing it used by Mr. James Somerville, at Indianapolis, probably as early as 1894.



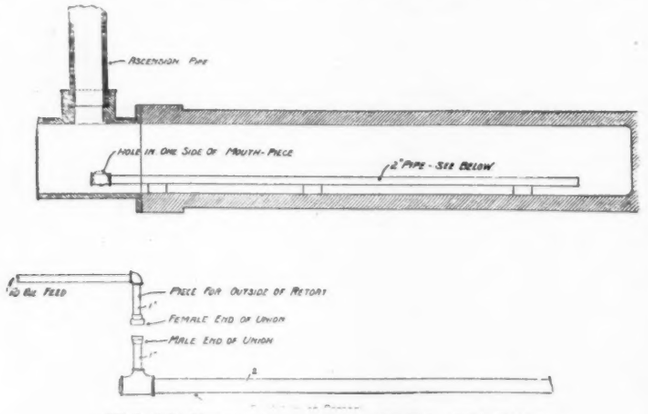
Wrinkle No. 1.—Oil Sight Feed.

The President—I will call on Mr. Somerville to discuss Wrinkle No. 1.

Mr. Somerville—If the members will take a pencil and put a little funnel where this pipe is indicated that will complete the whole design. The funnel was left out. The man who got this up should endeavor to adopt the suggestion of the man who tried it. The thing came to my notice some years ago and I endeavored to utilize it. The glass broke and I thought a fruit jar would do just as well. I tried the experiment and found that it answered the purpose.

Wrinkle No. 2.—Author, the Editor; purpose, a simple and satisfactory means of enriching coal gas with naphtha where the make is too small to permit one retort to run continuously on oil.

Description.—The sight-feeds are placed permanently in some suitable position, preferably on the wall directly in front of the retort used for oil. One of the upper retorts is used, and the oil-feed pipe is suspended permanently above the operating floor and terminates within 10 inches of the side of the mouthpiece with the female portion of a ground joint union. There is a hole large enough to freely admit the male portion of a 1-inch union, drilled in the side of the mouthpiece, looking directly into the female portion of this union. A 2-inch, wrought iron pipe of, say, 7 feet, is introduced into the retort, which is fitted on the mouthpiece end with a 2-inch by 2 inch by 1-inch tee, with 1-inch outlet at right angles to the 2-inch pipe, and having a 1 inch extension piece of a little less length than the width of the retort. This 1-inch pipe is passed through the hole in the side of the mouthpiece and the union screwed together, thus making an oil connection. The hole


ASCENSION PIPE
HOLE IN ONE SIDE OF MOUTH-PIECE
2" PIPE - SEE BELOW
TO OIL FEED
PIECE FOR OUTSIDE OF RETORT
FEMALE END OF UNION
MALE END OF UNION

Wrinkle No. 2.—Arrangement for Gasifying Oil in Retorts.

through which the 1-inch pipe passes is then made tight by luting with mud, the door of the retort closed and the oil fed in. A few moments only are required to convert the retort for oil gas making, and it can be run for 1, 2, 4, or any other desired number of hours, or may be run several times a day for 2 or 4 hours. The 2-inch pipe, which extends to within a foot or two of the end of the retort, has no opening except at the rear end. When the pipe is removed the hole in the mouthpiece is filled with an iron plug and luted with mud. The 2-inch pipe lies flat on the bottom of the retort and is kept sufficiently cool by the incoming oil to last for a long time. The scheme was devised to compensate for the unsatisfactory results obtained by the cartridge system.

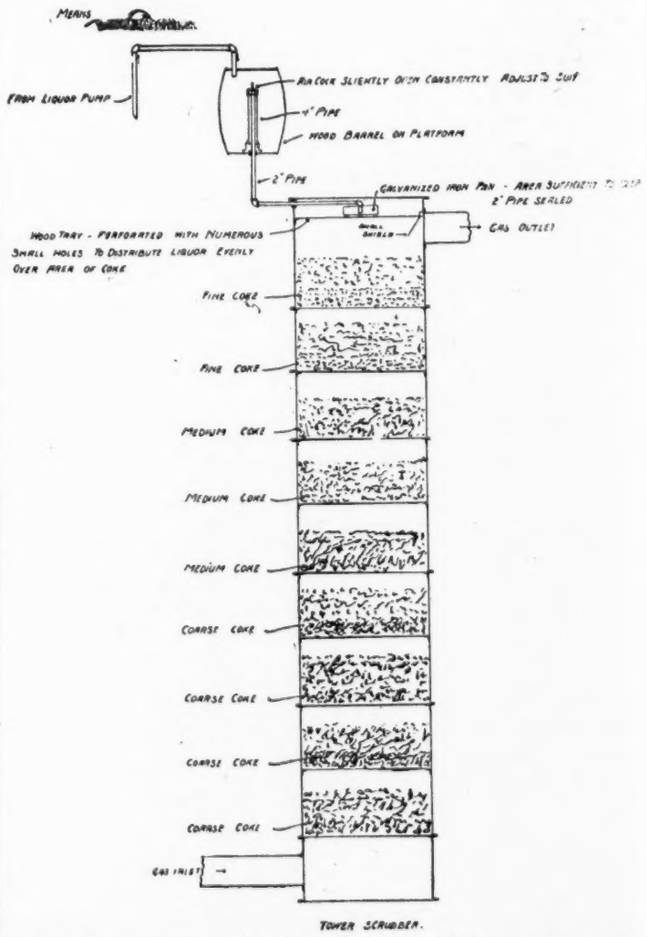
Mr. Persons—At Kansas City, Mo., a few years ago (Mr. Chollar was there at the time), an explosion occurred and we devised a scheme for making gas without purifying boxes. We made all the gas in Kansas City for 2 weeks on about this same design, except we passed it through a funnel. I prefer the latter. Then you can see how much oil you are feeding and be absolutely sure about it.

Mr. J. R. Lynn—I would like to ask Mr. Persons if they maintained a very high heat on the benches?

Mr. Persons—We made it intermittently. After a certain run we would cool a bench and drop it down and go at it again. If I remember right, about 96 retorts were so fitted up. The explosion was on the 17th of December, and on the 24th we had gas throughout the city. We continued making it in that way until about the middle of January.

Wrinkle No. 3.—Author, the Editor; purpose, a means for obtaining a good distribution of water in tower scrubbers.

Description.—The illustration is taken from our arrangement of this scheme at Denver. Weak liquor is used for washing, and, if simply introduced in the ordinary way, would trickle down through the center of the vessel or against its walls. The introduction of the liquor is simply modified to the extent of allowing the constant supply



Wrinkle No. 3.—Means for Obtaining Equal Distribution of Water in Tower Scrubber.

of liquor to flow into a receiving vessel which when full will siphon into the scrubber, causing a momentary flood, which thoroughly saturates the material contained in the scrubber. Scrubbers equipped as illustrated are in use at Madison and Denver, and are more than ordinarily satisfactory. The Denver scrubber, equipped in this manner, seems to be as efficient as our Standard scrubber.

Mr. Somerville—One thing about it I don't quite understand. When this little reservoir gets cool, does it tip over in some way or siphon out.

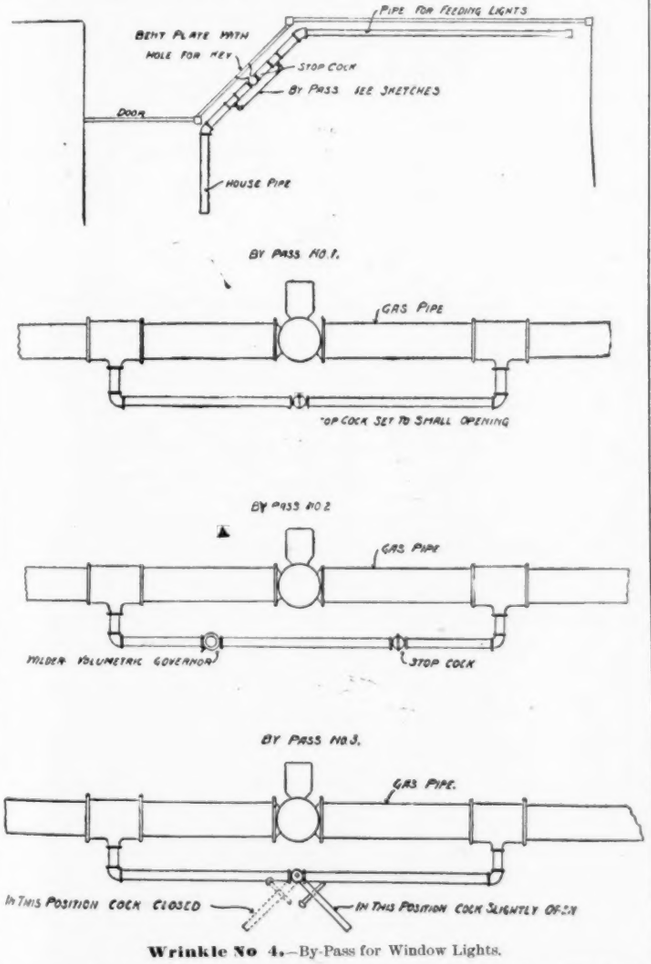
Mr. Butterworth—If Mr. Somerville will refer to the sketch he will be able to answer his own question. It will be apparent to you, Mr. Somerville, then, without further explanation, I think. I think it is a very good scheme.

Mr. Printz—About the same results can be obtained by using a flush tank such as commonly used in hotels. I know of one in Zanesville in use in that way, and it works very satisfactorily.

Wrinkle No. 4.—Author, W. H. Anson, Columbus, O.; purpose to permit control of window lights by a night watchman or others without entering the store.

Description—The supply pipe for the window lights is run adjacent to some accessible part of the window from the outside, and a stopcock placed in the pipe with an extension stem running through to the outside with a square head to fit on the night watchman's key, and finished off with an ornamental floor plate. This scheme enabled us to obtain a great deal of patronage for window lighting which could not otherwise have been had.

By-pass No. 1 is a simple form, and is older than this Association. By pass No. 2 is a modification of No. 1, to compensate for fluctuations in pressure. A Wilder, or other suitable form of a volumetric governor burner, is inserted on the small by pass pipe, and at time of lowest pressure is adjusted to pass just enough gas to maintain the pilot lights.



Wrinkle No 4.—By-Pass for Window Lights.

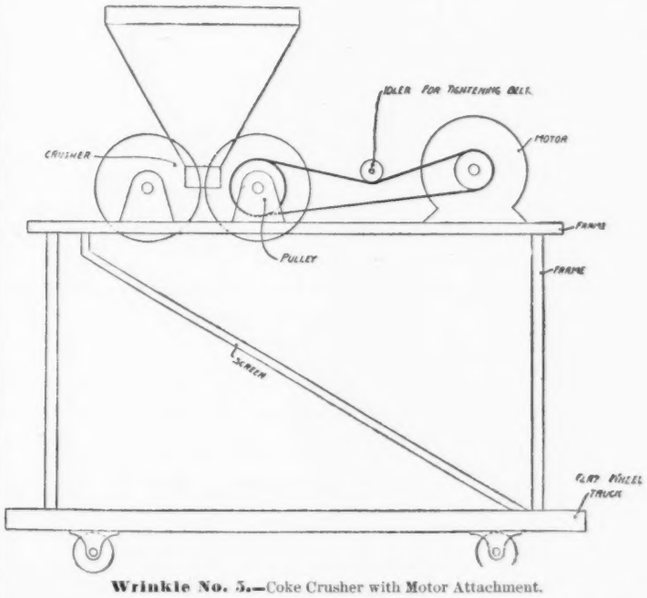
This results in a less consumption, and the objectionable glow of the lights at time of high pressure when they are not in use, and if adjustment is made at time of lowest pressure, they will always light up when the main cock is opened. By pass No. 3 is made by using a stopcock with a bent handle, which brings the arc of its movement on a vertical plane with the center of the pipe. A hole is tapped in the handle of the cock, and a machine screw is inserted, which strikes the pipe and fixes the exten. to which the cock may be closed. A by-pass of this sort may be so arranged that the gas may be entirely shut off by throwing the lever handle of the cock towards the head of the screw, and when thrown towards the point of the screw the cock will have sufficient opening to maintain a light in the lamps. The screw permits a very delicate adjustment.

Maintaining Welsbach lights with just sufficient gas to keep them lighted can be done satisfactorily under very unfavorable conditions, if the matter is given proper attention. I know of no simple way, however, to get satisfactory results where lights are on different levels except by piping all lights on different levels with separate pipes.

Mr. Perkins—We have a few cases in our city where the watchman turns the gas out and it is lighted by an electric spark. We do not use by-pass burners at all, but we have an arrangement very similar to the device shown in the wrinkle, so that the watchman can turn it off with a key from the outside.

Wrinkle No. 5.—Author, the Editor; purpose, to reduce the number of times coke must be handled to be crushed.

Description.—The crusher is an ordinary one, as made by C. M. Keller, of Columbus, Indiana, but is mounted on an extension bed frame of sufficient size to contain a 5-horse power motor, and the whole mounted on flat truck wheels. This enables the crusher to be taken to



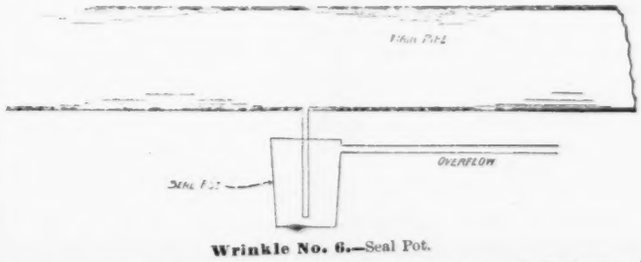
Wrinkle No. 5.—Coke Crusher with Motor Attachment.

the coke instead of taking the coke to the crusher. It will also permit the crusher to be operated along the edge of a long coke pile, or it can be made to "back up" and eat its way into the coke pile, always permitting the crusher to be within easy forking distance of the coke. At the same cost for crushing it is always desirable to crush the coke which has been stocked the longest or handled most. This coke is finer and less desirable for coarse coke, and after being crushed it loses its weather beaten appearance, owing to the numerous new fractures. We have used this arrangement at Madison for 3 or 4 years, and believe that it has saved us much money. A gas engine might be used instead of a motor, and gas supplied by a flexible tube, but the engine would have to be of considerably greater capacity, or else have a great fly-wheel weight, as we find that our 5 horse power motor must be fused to 20 horse power. The total work, however, with 2 men feeding coke is less than 5 horse power on an average, but so intermittent that at times it is nearly 4 times the rating of the motor.

Mr. J. R. Lynn, being called on by the President, said he had no experience with anything of that sort at all. He always took the coke to the crusher.

Wrinkle No. 6.—Author, doubtful; purpose, automatic discharge of condensation from main pipes.

Explanation of reason for offering this wrinkle: At the last meeting of the Western Gas Association the goose-neck drip was shown. I did not know that this drip was now used, as in case of heavy pressure the seal is blown out and it cannot reseal itself. I consider its use highly dangerous, and offer another form of automatic drip which I consider preferable.



Wrinkle No. 6.—Seal Pot.

Description.—The low part of the main is tapped on the bottom and a small pipe inserted which dips into a seal pot from which there is a fixed overflow. In case of excessive pressure, the gas will escape but

does not permanently destroy the seal. There is also so much water present that a much greater time is required to unseal by evaporation. Mr. Emerson McMillin, while Superintendent of the Columbus gas works, equipped that plant with these seal-pot drips, superseding the goose-neck type in 1883, and as far as I know he is the father of this wrinkle.

Mr. Chollar, being called on by the President, said: I suppose that kind of a drip would work all right, but I do not think I should care to have it. I would prefer to put in a regular, solid, tight seal. I used something similar to that and I have used a siphon. I remember one case years ago where the siphon got out of seal and I expect it blew for 3 or 4 years for all I know before it was discovered.

Mr. Butterworth—In the Columbus works we use this sort of seal pot. The top through which this drain pipe enters is made absolutely gas tight, and the overflow pipe is conducted into a common pipe brought up through the cellar of the building, and through the wall where it would be observed if any of the seal pots should be blowing. This would seem to remove Mr. Chollar's objection wholly.

Mr. J. R. Lynn—I should think in anything of that sort it would be a good place to put on a stopcock.

The President—I have had some experience with a similar drip pot and found if it ever did break seal it would keep on blowing and take all the fluid out.

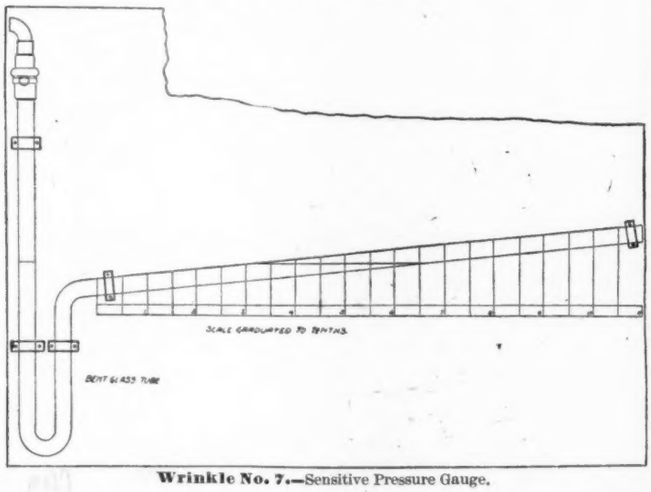
Mr. Butterworth—The advantage among others of the system we have in use is that in no event can gas escape into the cellar of your buildings and from the cellar find its way into the house above. The escaping gas is always conducted outdoors.

The President—It is not intended for street mains at all.

Mr. Butterworth—It can be used for that purpose. By making it a double seal-pot, putting in a second one in order to make assurance doubly sure, it would be very effective and cheap for street use.

Wrinkle No. 7.—Author, the editor, who designed this and several other gauges for making very sensitive measurements of gas pressures, but has since discovered that a similar gauge to it has been used for many years for measuring chimney draughts.

Description.—The gauge is simply a modification of the ordinary U-gauge with one leg carried out at a very slight angle from the horizontal. The reading of the gauge may be laid off on the horizontal travel, and $\frac{1}{10}$ inch pressure may be made to have a travel of an inch or more and thus permit very accurate readings.



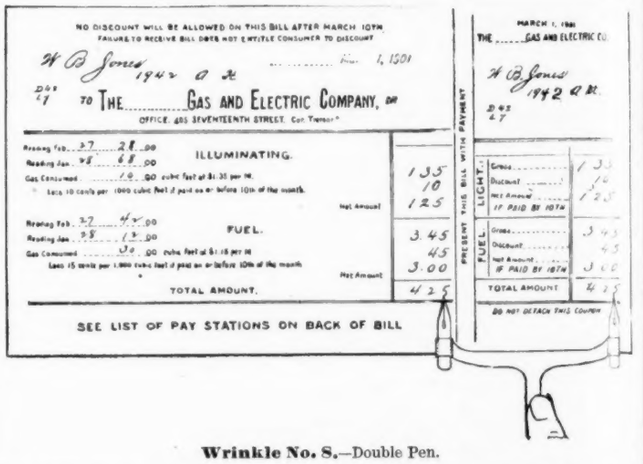
Wrinkle No. 7.—Sensitive Pressure Gauge.

Mr. Andrews, being called on by the President, said: This seems quite a good wrinkle, as it is rather difficult to read the gauge of the ordinary type closer than $\frac{1}{5}$ of an inch, and where you measure draughts you want to get a good deal closer than that, if your results are to amount to anything.

Mr. Chollar—An apparatus like that is on the market, with which you can read within a $\frac{1}{100}$ of an inch very nicely. I think it is made by Queen & Company, of Philadelphia. The apparatus is used more for chimney draughts than for gas draughts. They work very successfully.

Wrinkle No. 8.—Author, H. M. Long, South Bend, Ind.; purpose, to duplicate record on coupon of bill without actually rewriting it.

Description.—On the extremities of a bar, with a length equal to the distance between the statement column on the main bill to the statement column on the coupon, are mounted two ordinary pens. In put-


NO DISCOUNT WILL BE ALLOWED ON THIS BILL AFTER MARCH 10TH
FAILURE TO RECEIVE BILL DOES NOT ENTITLE CONSUMER TO DISCOUNT
H B Jones 1942 O St
TO THE Gas and Electric Company, DR
OFFICE, 405 SEVENTEENTH STREET, Cor. Tremont
ILLUMINATING.
FUEL.
TOTAL AMOUNT.
SEE LIST OF PAY STATIONS ON BACK OF BILL
PRESENT THIS BILL WITH PAYMENT
FUEL LIGHT
IF PAID BY 10TH
TOTAL AMOUNT
DO NOT DETACH THIS COUPON

Wrinkle No. 8.—Double Pen.

ting down the meter statement and consumption the penholder is so tilted that only the left hand pen is in contact with the paper, but when the extensions are made both pens are in contact with the paper, and figures on the main bill are duplicated on the coupon with but the labor of writing it once.

Mr. Charles S. Ritter, Columbus, O., being called on by the President, said: I think it would be very hard to use. I have something to recommend in its stead, though, and that is the rubber stamp. We have been using rubber stamps for some time, and by actual count I find a saving of from 50 to 75 per cent. in time in the making out of gas bills. The amount of gas consumed is on the top of the stamp and used as an index, and the gross amount, discount and net amount at the bottom of the stamp, so that when you get your consumption you can immediately reach for the proper stamp and use it. We have a set of stamps running from 10 cents to $10, which occupy a space about 12 inches square. The plan is considerably more convenient, I think, and can be more rapidly used than the device referred to by Mr. Doherty.

Mr. Butterworth—The stamp system mentioned by Mr. Ritter is a very good one. It saves a lot of time. You cannot make mistakes with it and your figures are legible.

Gen. Harbison—How does it affect your office help?

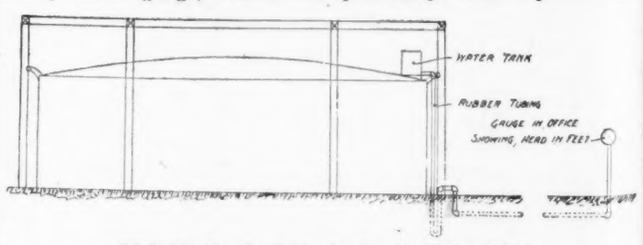
Mr. Butterworth—Reduces it. It is absolutely accurate. You can hardly make a mistake with it. It is very rapid and very satisfactory indeed.

Gen. Harbison—Does it require a $2,000 man to operate it, when a couple of good looking young ladies at $500 or $600 a year can do it the other way just as well?

Mr. Butterworth—We found the use of stamps for this work eminently satisfactory.

Wrinkle No. 9.—Author, R. J. Chambers, Montgomery, Ala.; purpose, to be able to indicate the height of a gasholder at a point from where it cannot be seen.

Description.—A tank of water is placed on the holder and connected by flexible tubing and iron pipe at some other point to an ordinary steam gauge, which has previously been experimentally

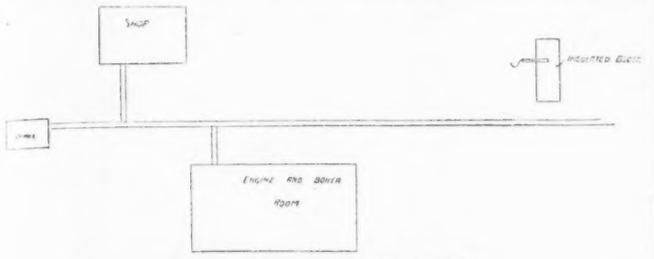


Wrinkle No. 9.—Device for Showing Holder Height.

calibrated into direct readings of the height for the holder. A recording Bristol steam gauge could be used if desired, and a permanent record obtained.

Wrinkle No. 10.—Author, B. W. Perkins, South Bend, Ind.; purpose, to economize the number of telephones used, or to enable it to be moved to such place as will enable it to be answered conveniently.

Description.—An ordinary telephone of the "wall-set" type may be used. The instrument circuit ends in 2 hook-eye terminals mounted on an insulated block (dry wood will suffice.) Parallel terminals are placed wherever it is desired to use the telephone, and these terminals



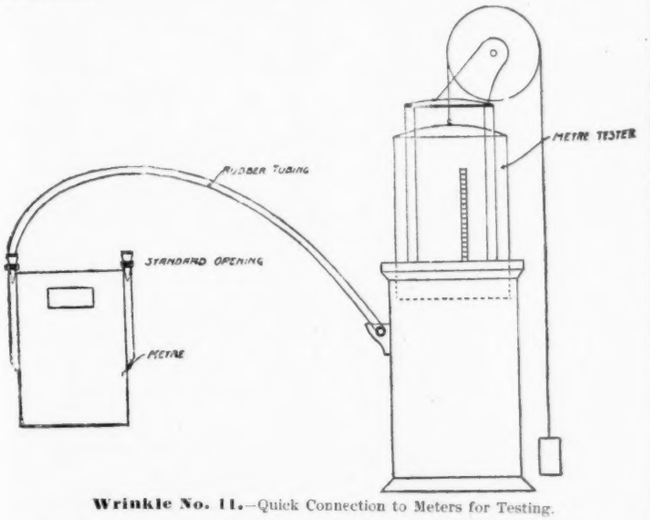
Wrinkle No. 10.—Movable Telephone.

end in two hooks equidistant to the hook eyes on the instruments. The instrument is then hung on whichever set of hooks is most conveniently located for answering the telephone. The weight of the instrument is enough to insure sufficient contact.

Mr. Perkins was called on and said: The description I should think would be sufficiently explanatory of this wrinkle. It was devised in our case, because our office is located at the works; and as that is locked up, of course, at 6 o'clock, we wanted the telephone for the balance of the night in another part of the works. This is the only way we could do it without having to pay for another telephone. We also use it in the shop adjacent.

Wrinkle No. 11.—Author, unknown; purpose, to lessen work in testing meters.

Description.—Instead of using the usual thread connection, a spigot shaped metal connection is provided, which slips into the inlet and outlet of the meter and is made tight by a roll of putty. I first saw this wrinkle in use at Syracuse, when that plant was in charge of Mr. Littlehales.



Wrinkle No. 11.—Quick Connection to Meters for Testing.

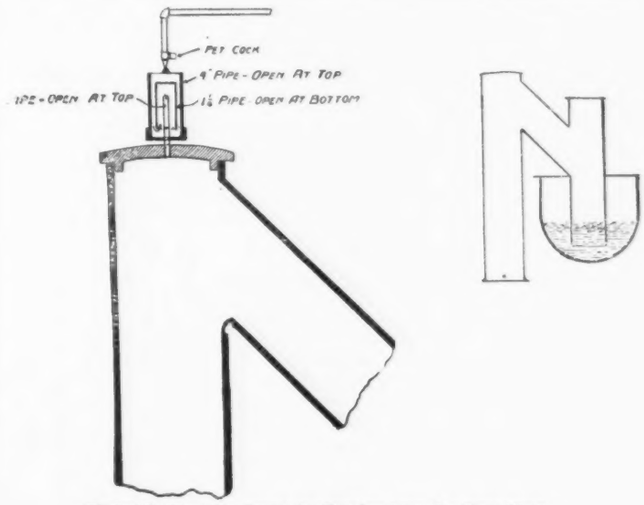
Mr. Olds—I do not quite understand how much time you gain when you stop to put the putty in.

Mr. Persons—I should doubt its practicability or quickness. It is not used in any meter shop that I know of. They simply use a lever on the nut and throw it by hand quickly.

Mr. Lynn—It might not take much muscular action, but I think it would consume more time. I saw a very good device for testing meters in Milwaukee. The one who was working it had a platform operated with a lever from the floor on which he puts his meters—the two connections are stationary. He gets the meter on the platform, simply steps on his lever and it brings the lever right up tight. It has a rubber joint that you can brace it up as tight as you wish. It is all done in a second. This lever is on a ratchet so that if you want to release it, all you have to do is to kick it off when a spring releases it and the meter drops down and is pulled away. It is one of the nicest devices of that kind I ever saw.

Wrinkle No. 12.—Author, the Editor; purpose, to prevent stopped standpipes by cooling them by the injection of small amount of water.

Description.—We were once troubled with stopped standpipes at Madison, which none of the usual remedies seemed to cure. The congestion in the standpipe seemed to be a semi-pitch, too soft for easy cleaning and too hard to flow. Lowering heats and firing green coal, or even slack saturated with light tar in the mouthpiece, did not relieve our trouble. We then equipped the lids of our ascension pipes



Wrinkle No. 12.—Device for Keeping Ascension Pipes Clear.

with the device illustrated, to enable water to be dripped into the standpipe, to either condense enough of the lighter tars to soften the deposit which was forming or to cool it to a degree of brittleness, which would enable its more easy removal. The scheme proved more effective than any other remedy we had tried, but was not entirely successful. It seemed to harden the deposit which formed in the top of the standpipe and soften the deposit in the lower end of the standpipe. Before we completed our experiments we changed our coal and the trouble disappeared. No bad results occurred from the use of water in the standpipes.

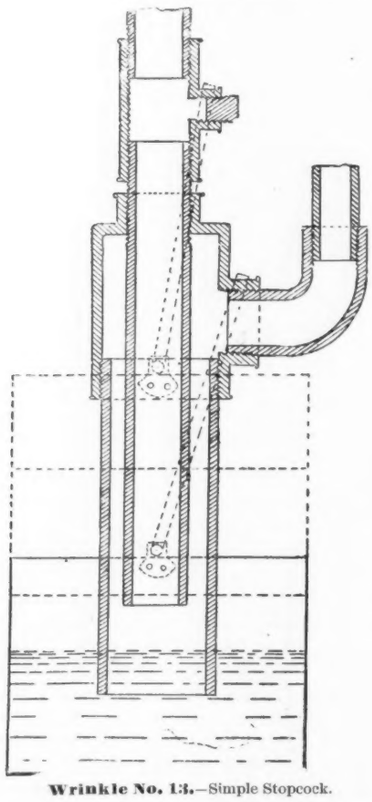
Mr. Somerville, being called on by the President, said: I suppose the idea is to keep the standpipe cool, and this seems to be a good method of doing it. He says that he changed his coal and that then the trouble disappeared. That is often the case, I find.

Mr. Coombs—Some years ago we had trouble with standpipes which occurred from high heat; of course, we know that to get the best results from a retort we have to maintain high heat. Whenever we run at low heat we have no trouble whatever with stopped pipes; but our yield was low, probably 4 feet per pound, and on increasing the heat for the purpose of increasing the yield per pound to 4¾ or 5 feet we were troubled with stopped standpipes. I found that as long as our pipe was cool we had no trouble, and the low heats on the retorts gave us a low temperature at the standpipe. I thought if we could keep up the high heat and decrease the standpipe's temperature, probably we would have less trouble. I thought at that time if we could construct a water jacket around the outside of the standpipe, maintaining a continuous stream of water through it, we might be able to decrease the trouble. We did so, and our trouble disappeared. While the trouble was obviated in that way, it seemed to be a difficult matter to construct these double standpipes. I took about three benches of 3's at that time and we had satisfactory results except the matter of construction. It is a little expensive and a good deal of trouble to do it. I then tried another experiment and put a reservoir over the top of the mouthpiece on a bench of 5's. We introduced the water on top, letting it run from the top through the two middles and down to the bottom, which plan answered the same purpose as the double standpipe. With that kind of an apparatus we found we could run at high heats without trouble from stopped standpipes. That is, with a 6 inch pipe. The larger the standpipe we have, of course, the less trouble we have with stops. We have found if you want to carry very high heats you can prevent this trouble by a double or a jacketed standpipe or a reservoir on each mouthpiece.

The President—I have used a perforated diaphragm in the mouth of the retort—rather at the rear of the mouthpiece—and got good results from it.

Wrinkle No. 13.—Author, the Editor; purpose, simple and absolutely tight stopcock, and one which can be used on crude gas or gases destructive to ordinary cocks.

Description.—The cut clearly shows the arrangement of piping. It can be made up as shown, or with two tees connected with a close nipple. A small tin pail, filled with water, can be used as a seal, or any other suitable vessel. This cock is particularly applicable for laboratory work, and especially where destructive gases are being

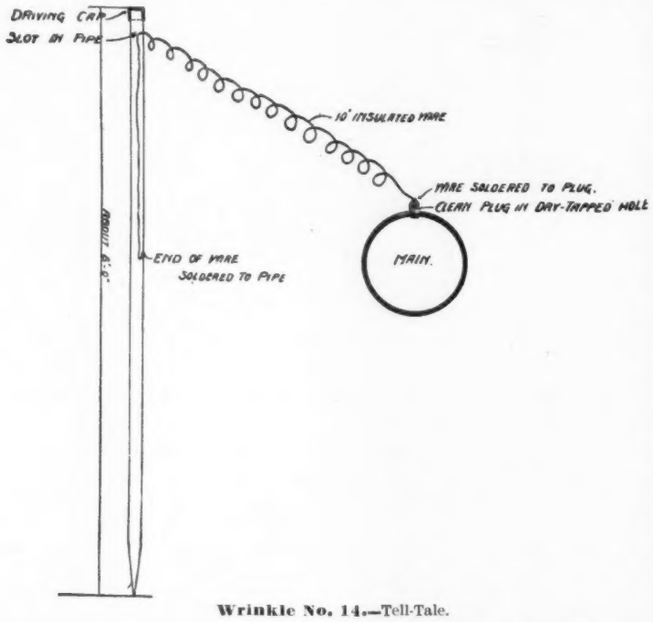


Wrinkle No. 13.—Simple Stopcock.

handled. Its use, however, is limited to low pressures that can be easily overcome by a reasonable depth of seal.

Wrinkle No. 14.—Author, unknown; brought to the attention of the Editor by Henry L. Lea, Evanston, Ill.; purpose, to determine the presence of electrolytic action on mains without uncovering them.

Description.—A hole is drilled into the main and a plug inserted. To this plug is connected a suitable flexible conductor, which is also connected to an iron bar driven in the ground alongside of the main. By pulling up the bar at stated periods it is believed that if the main is affected the bar will show it. I am a bit skeptical about the efficacy of this method, as the bar will not necessarily show any effect, even though the main may be badly eaten. If this method is used, great



Wrinkle No. 14.—Tell-Tale.

care must be taken to insure good electrical contacts to all connections. The hole in the main should be dry tapped, as a film of oil is a perfect insulator. The other connection must be made mechanically strong and then soldered. Mr. Lea also sent me a wrinkle used at DuQuoin, Ills., but failed to send a description which would enable it to be illustrated. It is an arrangement of a furnace chute for coke to be run back and forth on a trolley.

On motion of Mr. Persons a vote of thanks was tendered to Editor Doherty for the very interesting and valuable suggestions presented in the collection of wrinkles submitted.

[To be Continued.]

By-Product Coke Ovens or Improved Coal Gas Works for a City Supply—A Comparison.

[Prepared for the JOURNAL, by MR. FREDERIC EGNER.]

This subject is rich enough to supply material for a book. A number of long articles, elaborating the advantages of by-product coke ovens, have been published the past seven years; but while on the whole they gave correct and valuable information they are misleading because they were invariably one sided.

Claims have been made in recent years by advocates of coke oven processes that these possessed such advantages as to warrant their adoption in place of other methods, even to the abandoning of existing gas works. The fact that that very thing has been done, in a measure, at and near the city of Boston, Mass., has been quoted as proving the correctness of the assumed position. The writer has had the honor and pleasure of meeting the leading financial and engineering talent interested in promoting the coke oven systems in the United States, and gladly records his admiration of their skill and ability, and undoubted sincerity, with relation to the claims referred to, even though he cannot agree with their somewhat radical views as to which is the most economical method of producing gas for general consumption. That the by-product coke oven is a long way ahead of older means of coke manufacture may be admitted without doubt, and that it has a wide and continually expanding field of usefulness and profit may be also accepted; but that it is the best method for manufacturing gas can be questioned and shown to be based upon erroneous prepositions. The large coking works at Everett, near Boston, afford a striking example of skill, efficiency of design and construction, simplicity of system and economy in operation. We may, therefore, take those works as fairly representative of their kind in our comparison with an up-to-date coal gas works. Since the latter type of gas works is the costliest to build (a water gas works costing much less), it cannot be said that the by-product coke oven system is subjected to unfair discrimination in this article. The writer will avoid all technicalities and great arrays of tables of figures, and apply as briefly as may be simple, common sense reasoning, supported by the plain facts in making the comparison. It is, however, assumed that the reader has seen the coking works named, or some other of the kind, or, at the least, has read some of the very full and sometimes profusely illustrated articles descriptive of such works which have appeared in several of the technical periodicals during the past few years. One of the latest of these articles appeared in the *Journal für Gasbeleuchtung*, etc., of December 8th, 1900, which describes the "Brunck System of Coke Ovens," having seven fine illustrations printed in with the text. The coking ovens (referring in this paper throughout to the so called by-product coke ovens) may not inappropriately be likened to retort benches with full-depth regenerative furnaces, but containing, instead of a number of small retorts, a less number of huge retorts. Those at the Everett works are said to be 18 inches wide, 33 feet long, and 5 feet 6 inches or 6 feet high, and coke 5½ tons of coal every 29 to 30 hours. The duration of charges was given as 29 hours. The carbonizing power of coal retorts, as employed in a well managed gas works, need not presumably be detailed here. The figures are given to enable the reader to work out the results stated further on, if so desired.

The coking ovens are erected in the open air, with no sort of building to protect the benches or the men, but the discharging machine pusher is housed, carrying the housing on the carriage bearing the machine. The reasons which permit doing without a retort house in a coke oven plant hold equally good (or bad) for a coal gas works, in which, for instance, the inclined retort system might be employed. But one reason why a suitable building or retort house can be used in an ordinary coal gas works, while not in the coke oven plant, is that in the latter case the building would have to be of such enormous proportions and consequent cost, that, regardless of consequences to apparatus or men, a building must be dispensed with. Therefore, a coking plant is no cheaper to construct, because of the use of a retort house with a gas works, since the retort house is no more a necessity with the latter than with the by-product coke oven plant. You may eliminate the retort house item from your comparative calculations, if you like, gentlemen. Bearing upon that matter the writer may say

he had under his charge at one time quite a large installation of old style, manual labor operated retort benches, over which there was, by accident, no roof for quite a while, and neither the apparatus, results nor men seemed to suffer for the time being. But it was not in the winter. To produce equal volumes of gas, even if none were used to heat the ovens, requires a little more than twice the ground area than is needed in any good coal gas works, while if about half or more of the gas made is used in the heating of the ovens, and only the other half is available for sale, then the ground area required by the coke ovens is more than 4 times as great as with the regular coal gas works. Comparing the results given as obtained at the Everett works and those known to be reliable from large coal gas works, it is found that the coking plant requires 25 square feet of ground for the generating plant, per 1,000 cubic feet of available (gas for sale) gas produced per 24 hours, while 6 square feet will be ample with the same result in a well designed, up-to date coal gas works. Where real estate is cheap that item may not amount to much after all; but when it is remembered that the area of equally costly brickwork is about 2½ times greater with the by-product coke ovens than with the coal gas works, per 1,000 cubic feet producing capacity per 24 hours, that portion of the question deserves consideration; and it does not bear out the claim of greater economy in construction, advanced for instance by Dr. H. Wiechell, in *Journal of Gas Lighting* of November last, and appear ing still earlier elsewhere. As to the rest of the plant, since it must be necessarily of a like kind as that employed in an ordinary coal gas works, the following is worth taking into consideration. As double the quantity of gas must be manipulated to obtain the required half for sale, the exhausting, condensing and scrubbing plant must also be twice the capacity.

The gas consumed in the furnaces need not be purified, although to obtain the tar and ammonia in it it is passed through the vessels just mentioned; but that portion of gas which is sold must be purified and, therefore, calls for purifying apparatus of capacity equal to that needed in coal gas works. Evidently larger buildings must be provided to accommodate the double exhauster, boiler, condensing and scrubbing apparatus needed, while the purifiers and station meters require no less space than those with which coal gas works are equipped. All of this certainly indicates that the coke oven plant costs more, not less, than the regular gas works as to cost of erection for equal power of gas production per diem. It is also claimed by the advocates of the coke oven systems that the cost of operation is very much less than with the regular coal gas works. Under the old style of doing things this was and is true; but with a thoroughly well designed, fully equipped, in telligently managed gas works, the reverse is the fact; or undoubtedly may be so made. The cost of carbonizing a ton of gas coal in a large works supplied with the inclined retort system may be several cents less even than any claims made by the coke oven people themselves up to this date. Another disadvantage of the by-product coke oven system is its lack of "elasticity;" that is to say, the inability to quickly change the volume of gas required, which changes are so often experienced in supplying gas to a city. At Everett it was noticed that gas producers were in the course of erection, which would make larger quantities of the gas produced in the retorts available. Other means to the same end have been proposed, and could be introduced if the management cared to avail themselves of the same, so that the objection of non-elasticity could easily be overcome. Gasholders are also a necessity, unless ex isting gas companies give the use of theirs; and, therefore, the author fails to see where the by-product coke oven system should be preferred to existing or possible to be constructed coal gas works, unless, indeed, there is a ready market for the superior quality of coke for metallurgical purposes which can be produced in these ovens. This, together with the larger quantity of ammonia and tar produced per 1,000 cubic feet of available gas made, might offset favorably the unquestionably greater cost of plant; but of this point the interested reader must judge for himself. It is not the object of the writer to cry down the advantages actually attainable by the by-product coke oven system, but to represent the other side of the coke oven or gas works question as im partially as he could. The greater quantity of tar to be produced is not so attractive a feature of the coke oven po sibilities as to inspire the general gas manager with any great degree of enthusiasm, and with greater production it would become less so. The same might be said about the increase in coke production; for it is not so very long ago that many gas companies took to making water gas, partly to get rid of the coke, and while coke oven coke can be used in manufactures for which gas house coke is not suited, the latter is a very good article for domestic purposes, and the best that can be employed in the manufacture of water gas, though lazy gas makers will not admit this latter fact. Summing up, the writer believes that the facts in the case do not indicate that the by-product coke oven system is a better contrivance for the profitable manufacture of coal gas than a thoroughly up to date coal gas works would be, although the coking works *per se* might be a profitable enough investment.

That there are situations where the coking plant, by reason of quality and price of coal supply and a good market for tar products and coke (ammonia is always in demand), would be the most desirable is very true; but that everybody in need of improved methods for manufacturing gas should go in for coke ovens, regardless of anything else, admits of serious doubt, as the writer hopes he has made clear to the readers of this article.

Gas: Its Uses in India.

[By Mr. George Cecil, in *Journal of Gas Lighting*]

India is by way of being a country in which improvement and progress are not much encouraged. What was good enough for the native's great-grandfather, is good enough for the latter's great-grandson. What was approved of by Job Charnock in the early days of Anglo-India, appears to be venerated by the latter-day European exile. In this connection, however, it may be observed that, although young Calcutta and Bombay find a difficulty in obtaining suitable garments from the Anglo Indian *emporii*, the "palanquin" of 2 centuries ago has given place to the eminently modern victoria and brougham, though of antiquated shape and design. And even innovations of a more startling nature have taken place. In "hot weather," ice is obtainable at most of the hotels; and the streets of India's metropolis are patrolled by imported English, semi-European, and indigenous Custodians of the Peace. But other equally necessary accessories to civilization are denied to the benighted Anglo-Indian and "Aryan brother." It is true that the steam engine flourishes in India; and it is remarkable that the benefits to be derived from the use of gas are familiar objects in the East. But it must not be imagined from this that the latest developments of the art of gas lighting are *in evidence* in India. Although a satisfactory plant is associated with more than 1 gas works in England's most important Eastern possession, that of the works connected with native and indigenous enterprise is, it is rumored, not always all that is desirable. The description of paraphernalia used by Van Helmont, Priestley, Macqueen, and later by Faraday, and more recently by Apjohn are said to be still in use in the laboratories of some of India's eminent gas works managers—who are not necessarily English, or even Anglo-Indianized.

Although it cannot perhaps be stated, as an accurate fact, that the experiments of Pepys and Allen in connection with the absorbing properties of charcoal are still a novelty in scientific Anglo-Indian gas circles, it may be affirmed, with some truth, that the discoveries of Priestley, Dalton, Döbereiner, and Graham, in connection with hydrogen and oxygen, are, for the native Indian seeker after knowledge, to some extent tinged with novelty. It would also appear that the experiment of Faust, in connection with gases passed through a sheet of caoutchouc, command in Hindustan an admiration which has in England been relegated to the dark ages of science. However, India possesses a number of gas works, and has also taken kindly to the gas engine; and this is indeed evidence of the fact that the country inhabitated by the Anglo-Indian and the Aryan has periodical fits of wakefulness—somnolent though it usually is.

While the inhabitants of India were engaged in internal strife, the useful combination of hydrogen and carbon was exploited in England by Henry. The Oriental warriors were therefore much too busy to avail themselves of the discovery. Some 130 years ago, Shirley was thought to have manufactured coal gas. But India was then bellicosely engaged, and was consequently unable to benefit by this departure. The erection of Murdoch's miniature gasholder in Cornwall in 1792 was, it is understood, chronicled in the Indian equivalent for "*The Times*" in the first half of the last century. In 1807 the obscurity of Pall Mall was dissipated by the introduction of gas. When in England this innovation had become a matter of ancient history, India awoke to the fact that the thoroughfares of its capital were none too well lighted. Subsequently, the Anglo-Indian and native inhabitants of Calcutta were surprised to find a gas works erected in their midst. Bombay and Madras also were eventually blest in a like manner; while Lahore, Lucknow, Rawalpindi, and a few other of the native States followed suit.

It may be observed, in connection with the introduction of this branch of science into the realms of Aryan royalty, that the potentate sets up a miniature gas works with a view to ingratiate himself with

the Anglo Indian Government, who will, he fondly hopes, reward his public spirit (?) with the "Commander of the Indian Empire" decoration—a distinction conferred upon natives who have learnt to read and write, and who are not openly seditious. The European element is also presented with it, though some of the latter have been known to decline the honor. However, the Orientals referred to deserve encouragement. It may also be said of them that they earn the gratitude of visitors to their capitals; for, when driving or walking through a native city, well lighted streets are preferable to ill-illuminated thoroughfares. Such potentates apply gas lighting to their palaces and suburban retreats. Their public buildings are also thus lighted. In Lahore, Lucknow, and Nagpore, which are respectively the capitals of the Punjaub, Northwest Provinces, and Central Provinces, the Government buildings are provided with oil lamps but sparsely fed—and with an inferior description of oil. With the exception of Watson's Hotel, Bombay, which is provided with the electric light, the hotels in India's large cities are lighted by oil lamps. However, in connection with the installation of electric light referred to, it may be observed that the light in question is dim—religious, and damnable. At the dining table, one can hardly see to discriminate between gristle and gravy; while the reading room, owing to the poorness of the illuminating powe furnished, is, at night, quite misnamed. The Great Eastern Hotel, Calcutta, is provided with gas, and, should the burners be in good condition, the light is of a satisfactory nature. Unfortunately, however, at the caravansary named, the burners appear to be ancient retainers. The reading room of the establishment is nightly filled with furious visitors, who, after a sojourn of some days, are apt to find a visit to the local optician necessary. A complaint to the Chairman of the Hotel Company, would probably result in a reply of the following nature: "Dear Sir.—If you sit nearer the light, you will see better." In India, among the Anglo-Indian contingent, intelligence is said to be unknown.

As a general rule, gas is not encouraged in connection with the lighting of large clubs; the indigenous "butti" (lamp) being in vogue. The streets, however, in a very few Indian towns, are associated, at sun down, with that modern invention gas; while the bungalows of one or two sybarites in Bombay and Calcutta are lighted in the same manner. But such exceptions are, indeed, rare. The Anglo-Indian seems to prefer a lamp which makes his fingers filthy, and his temper undesirable. One or two of the Indian railway companies are provided with gas lighted carriages—the gas being manufactured at the company's own works; but the majority provide their passengers with wretched lamps in which castor oil is burnt. The latter gives an inferior light, or absolutely no light of any description; while economical lines, which are bent on earning large dividends at any price, refrain from even lighting their lamps. No mercantile offices in India are lighted by gas; the commercial community being easily satisfied. What was approved of by Anglo Indians in the year 1801, finds favor in the present year of progress Oriental.

The native Colossus of Finance, and the Aryan voluptuary, have been known to approach the local gas works of one of the Presidency capitals, with a view to securing an installation in their palatial residences. Thus have they expressed themselves:

Dear Sir—I propose lighting my harem apartments with English gas, as used by His Excellency the Viceroy, for similar purposes. Kindly state per return what it will cost, including an Otto gas engine to pump up my water. I want Bray's gas burners and a superfine meter; and be quick in replying, for I am hurried. I will pay you very soon if you are cheap. Wishing you a happy life, I am, truly,

MONKEYPORE, Jan. 1, 1901. RAJAH OF MONKEYPORE.

Dear Sir—I am a poor fellow, and I wants to light my poor devil of a hut in the fashion of English sahibs. Now what will you take to do the job slap up? You do it quite low, and I will see that my Master, the Honorable Baboo Grish Chunder Mukerji patronizes your distinguished firm for his domestic requirements of gas. I wants Bunsen burners. You make the fine bargain, and I will ever pray for your prosperity and pleasures.—Your faithful, BIHORI LAL.

Gas cooking ranges are not precisely common in India; nor are grillers, restaurant ovens, gas stoves and gas fires. The gasfitting, such as is necessary, is occasionally undertaken by practically any person desirous of turning an honest (?) penny. And should the operative who is engaged to perform the work be absolutely incapable, this detail will not deter him from posing as an expert. In India, the rupee, like the American dollar, is almighty; and many of those who earn it, if not incapable, are distinctly far removed from being adepts at their work. However, the Anglo-Indian employer is more than easily satisfied. Small wonder then that the employee, when subjected to a patron of this description, fails to be a success.

In France, Germany and England, and in other civilized countries, gas companies are known to be fined for polluting a stream. In Hindostan such *contretemps* do not occur. The country in question possesses its own unapproachable and unequalled stinks—foreign odors, such as those which owe their existence to a gas works, do not affect the olfactory nerves of the Aryan brother. The latter's Anglo Indian cousin, it should, however, be mentioned, is singularly averse to the malodorous bye products of the gas works of India. Though not intelligent—judged from the standpoint appertaining to civilized countries—the Anglo Indian is a clean person with a highly developed sense of smell. Should a dispute occur between a gas company and its clients, the matter would, very probably, as in England, be submitted to arbitration. In the East a vote has its monetary value.

The competition which in India once existed between castor oil and kerosene oil, and subsequently between the latter commodity and gas, is likely to continue; and since Hindustan is essentially a slumberous country, the more ancient system of oil lighting will be found hard to oust. Should an innovation possessing merit be introduced into a country, it is unlikely to meet with encouragement and success, unless the public to whom it is offered are possessed of an intelligent sense of improvement as well as advancement. Does India possess this desirable qualification? The English visitor, should he be of patriotic tendencies, will perhaps maintain a discreet silence upon the subject. The American tourist will not. It is possible, a century or so hence, that the Englishman domiciled in India's more important business, social, and official centers, will find a well lighted club, an hotel reading room in which it is possible at night to judge of the contents of the literary pabulum provided, and an office in which the final hour of his afternoon's labors need not be performed to the accompaniment of a poor light and its attendant language. Eventually, the amateur baritone, when warbling to Anglo Indian audiences, may find the pages of "To Anthea" or "Dio Possente" illuminated by the rays emanating from a Scott Snell self-intensifying gas lamp, or needle burner. Lord Curzon's successor may, in the distant future, on alighting at the Anglo Indian Euston, find a well-lighted platform awaiting him; while the Calcutta Gas Company's head fitter, should he be summoned to Allahabad to tinker the East Indian Railway Company's plant, will be able to make his way across the platform without barking his shins three times in as many yards. But—always a "but"—it does not always do to be too sanguine. In the meantime, should the Muscovite succeed in overcoming the native regiments of Madras, he will possibly cause the capital of the Presidency to become a blaze of gas light. Northern India, however, would not participate in this advantageous luxury; for the splendid Sikh regiments, and their capable officers, would probably form an impediment to the progress of any invading force. In the meantime, India is benighted in more senses than one.

Magnetic Testing of Oxidized Iron.

Engineering says that the sheet iron used in the construction of dynamos and transformers is generally coated with a layer of oxides, the compound Fe_3O_4, or a mixture of the oxides FeO and Fe_2O_3 in varying proportions. This oxide skin, which the iron received in the mills, partly peels off, and may, more or less perfectly, be improved by pickling. Transformer and dynamo iron sheets are not pickled, as a rule, because the process causes expense, and because the oxide skin is considered useful to a certain extent as an insulator. Such irons are annealed with their oxide layer still on. During the annealing a further oxidation ensues which is afterwards conspicuous by the blue color of the margin of the sheets, marking the boundary to which the air penetrated between the plates. There is also a reaction between the protoxide and the pure iron underneath it, resulting in a further eating of the oxide into the plate. In submitting the iron to magnetic tests, this layer of oxide is generally disregarded as too thin and insignificant, and the whole plate treated as if it consisted entirely of pure iron. It has, however, more than once been pointed out that this assumption leads to erroneous results. But as it seemed to be very difficult to obtain any estimate of the thickness of that oxide skin, no definite allowance could be made. The problem is successfully dealt with by Hans Kamps in the *Elektrotechnische Zeitschrift* of January 24. Applying a differential method, based upon the different magnetic permeabilities of iron and its oxides, he has found it possible to determine the thickness of the oxide layer to within 0.01 millimeter, with the aid of an ordinary Koepsel magnetization apparatus. He observed thicknesses of from 0.05 to 0.097 millimeter, representing in several cases more than

10 per cent., and even 13 per cent., of the total thickness. The values are, no doubt, high, and naturally so, since specimens were selected, for which a certain oxidation could be presumed. But the oxide layers are sufficiently important to affect the figures which we derive from magneto static and watt measurements, as Kamps demonstrates somewhat at length. We will not reproduce his mathematics, but refer to some of his general remarks. It results that ordinary—that is, oxidized sheet—iron fares too well in determinations of hysteresis losses in comparison with pure iron, and our not bearing this feature in mind leads us to assume a greater want of homogeneity in different parts of a plate than need really exist. Thus test specimens from the blue oxidized margins apparently represent an iron magnetically inferior to a piece cut from the center of the sheet. The hysteresis test points to the opposite conclusions. There may, of course, be want of homogeneity; but there is more oxidation near the edge, and, therefore, comparatively less iron. The superior figures for the marginal test pieces have, by Röhr, been ascribed to a more thorough annealing. Kamps does not see why appreciable temperature differences should arise in the box furnaces, and has been unable to detect any by measurement, and thinks, moreover, that the marginal oxidation could be avoided. He warns us, on the other hand, against the presumption of any equality of materials, when magneto static experiments, conducted with small test specimens, and watt measurements with larger pieces, yield practically the same values. It must be feared that the agreement is accidental; for even the most careful annealing can not insure homogeneity. The insulation of sheets for transformers, etc., is another feature. The layer of oxide insulates, and Kamps confirms experiments by Wien, according to which the special paper insulation may be dispensed with. The sheets were only held together, however; under pressure the oxides may possibly become conductors, and permit the circulation of Foucault currents. Some such view is evidently favored by manufacturers who adhere to the use of paper insulation. But if the paper is unavoidable, then it may also be argued that the oxide layer should be removed, since it lowers the magnetic quality of the iron. The additional cost might amount to 15 per cent.; the expense would repay itself in the course of a year by an increase in the efficiency. It is true that the thinnest sheets, 0.375 millimeter in thickness, are most generally used in dynamo construction, and that the Foucault currents rapidly diminish with decreasing thickness of the iron. But the thinner the plates, the more the layer of oxide counts with regards to the useful section of real iron. There will be a minimum of losses in iron for a certain thickness; owing to the oxide layer, it will be advisable to make the plates a little thicker than theoretical considerations would suggest.

Oil for Streets.

Mr. A. E. Brock, Trustee of the city of Redlands, Cal., reporting to the California League of Municipalities in the matter of the successful use of oil on the streets, says:

It has in fact settled the question of dust with us. Two years ago, when we adopted the plan, water was very scarce, and that moved us to try the experiment of using oil. We had not a single complaint from any person in the town in regard to the use of the oil. It has satisfied everybody much better than water, and, what is one of the best features of it is, that when the rainy season comes it protects our roads and keeps them in better condition than would otherwise be the case by putting a coating upon the streets. One objection that was raised to it was its effect on ladies' dresses and bicycles. But all of those objections have been practically settled. There is nothing whatever detrimental in the use of oil on the streets, and the more we use it the more we think of it. There is no doubt that we will continue to use it instead of water. The oil must be heated and be put on hot. It is applied with a patented machine 6 feet wide, and on top of it the machine puts a little dust—it works better where there is about an inch of dust on the street. It should be put on in hot weather as it runs better and spreads out. Then in a day or two it can be driven over. At first we applied it on one side of the street and put up barriers so as to keep people off, but now we let them drive over it if they wish. It will stick on the wheels of a wagon for a day, but after that it is not noticed. Three times sprinkling a year will keep the dust down. It is not applicable to an asphalt street, as it would spoil the asphalt.

We paid one year $4,424, including $15 a mile royalty for the use of the machine on a total of 18 miles of street, and the sprinkled space was 18 feet wide on some streets and on some 12 feet wide, the sprinkled area being 95,000 square feet.

A poor grade of oil with an asphaltum base is used, costing $1 to $1.25 a barrel. The total cost of sprinkling for the width of street served was 8 cents a front foot on each side of the street, of which the property owners cheerfully paid 2 cents.

The only objection to the use of oil in the Berkeley park system was the rank odor, which lasts from 4 to 6 weeks.

ITEMS OF INTEREST FROM VARIOUS LOCALITIES.

Mr. W. H. Frapwell, since 1892 in the employment of the Morristown (N. J.) Gas Light Company, has been appointed Superintendent of the Meridian (Miss.) Gas Light Company. He takes charge there May 1st.

Writing of Meridian puts us in mind of the fact that the Company has just completed a very successful course of lectures on cooking by gas. The demonstrator and lecturess was Mrs. Helen Armstrong.

The Maryland Meter and Manufacturing Company has secured commodious and convenient headquarters for its Chicago office and warerooms at Nos. 80–88 West Jackson Boulevard, and will occupy the same May 1st. This is a central location, being only one block from the Union Station.

At the annual meeting of the Bangor (Pa.) Gas Company the officers chosen were: Directors, C. N. Miller, W. R. Grubb, A. M. Paff, J. E. Long, Herbert C. Slamp, John Langmead and E. K. Eisenhart; President, A. M. Paff; Treasurer, Oliver La Bar; Secretary, Clarence Beck.

The proprietors of the Elmira (N.Y.) Water, Light and Power Company have announced a reduction in the selling rates, to take effect May 1st: On illuminating account to $1.50 per 1,000 cubic feet, from $1.65; on fuel account to $1.10, from $1.25. The Company will largely extend its main system, proposes to push the use of gas for purposes other than lighting, and it is hoped it is arranging for considerable plant rejuvenation.

The Western Gas Construction Company, of Fort Wayne, Ind., has been awarded the contract for the building of the new coal gas works for the Franklin (Ind.) Water, Light and Power Company. The contract provides for the Western Company's improved system of treating coal gas, and it also directs that the contracting Company shall install its complete method of purifying.

We understand that Mr. Edward Manrara, President of the Tampa (Fla.) Gas Company, has purchased the interest therein formerly owned by Col. Peter O. Knight. The Tampa Company certainly has a good future.

Messrs. Isaac B. Craig and George S. Richmond have arranged for the purchase of the plant and franchises of the Mattoon (Ills.) Gas Light and Coke Company.

The proprietors of the Kenosha (Wis.) Gas and Electric Company will place several miles of additional mains this season, and will also construct a new power house.

The Chelsea (Mass.) Board of Aldermen recently passed an order requesting Mayor Gould to appeal to the Board of Gas and Electric Light Commissioners for a revision of the rates charged by the Chelsea Gas Light Company.

Mr. George R. Roxbury, for some time assistant inspector of gas and meters for Kansas City, Mo., has been dismissed from the service.

Mr. Andrew J. Currier has been elected to the vacancy in the Board of Directors of the Pawtucket (R. I.) Gas Company, caused by the death of Mr. James G. Fales.

The issue of the Ashtabula (O.) *Beacon-Record*, dated the 5th inst., contains a full page advertisement, from the Ashtabula Gas Company, reciting the damage done to persons and properties in that city in the past year through the use of oil stoves and the like.

The Hampton Roads Investment and Improvement Company has been chartered for the purpose of manufacturing and supplying gas and electric currents to the residents of Newport News and Hampton Roads, Va. It is proposed to locate the plants on a site midway of the named places, and the scheme embraces also a real estate speculation. The concern is capitalized in $75,000, and its officers are: Directors,

C. Perkins, A. E. G. Klor, B. P. Wilson, J. V. Bickford, M. B. Crowell, L. R. Timberlake and H. J. Lewis; President, C. Perkins; Secretary, A. E. G. Klor.

A CORRESPONDENT, who usually knows that about which he writes, sends the following *resumé* regarding the fuel gas question, as from the latest discussion thereof, which was had at the convention of the Ohio Gas Light Association:

"Gas engineers and superintendents, having been informed by authority that the science of making good gas cheaply was not longer of much importance, or entirely secondary to the art of selling it, seem of late to devote much time and attention to the devising of grotesque advertising schemes. Some of these, while new to the gas industry, are nevertheless old enough to have whiskers amongst those who have been engaged in the trading of 'corsetier,' the selling of millinery, etc. To the credit of the profession it has been shown that the gas engineer is equal to the new demands on his versatility and for the occasion; and some of the brethren fairly sparkle with success in their application of transposed advertising dodges, worthy of the efforts of the ablest dry-goods and cheap clothing vendors anywhere. Maybe it would pay gas companies to hire men experienced in fire, bankrupt stock, bargain day or other catchpenny methods of attracting public attention, and thereby not only greatly increase their sales, but enable the engineer and superintendent to devote his time to the real business of his calling, to the certain pecuniary advantage of the company that employs him, if one could only get the company to see it. Your correspondent, who tried this once, engaged a former clothing salesman to take up, as a new line, the selling of gas stoves and appliances. He was a howling success. The young man fairly startled the community and his employers with lurid advertisements; and he did sell stoves to beat the band; and he was well satisfied with a salary of $14 per week; but to have made a real, practical, reliable gas man of him, such as an average superintendent is supposed to be, would not only have consumed a few years of time, but would have cost (as it did in many known instances) his employers from $500 to $5,000 in actual cash. Still, selling is much more important than intelligent engineering management! It is important to inform the public of the advantages of gas as not only a convenient but even economic fuel, and all efforts made to increase sales are worthy of respect and encouragement *locally;* but much of this Cheap John talk in our Association meetings does seem a bit undignified and out of place with men who may lay right claim to being engaged in a scientific and technical industry. By-and-bye, when the fad has lost its novelty, and when gas companies advertise their wares as others have always done, we may return to first principles, and give due attention to the real science of gas manufacture, including distribution and application, to the greater profit of our shareholders. In the matter of applying gas to other than domestic purposes, people outside of the regular profession are even now leaving us behind and are in the place where we should lead. The assertion that gas is the cheapest fuel for domestic use is freely made, even though still generally doubted. That it is also the cheapest for industrial purposes few believe, although it is being applied in that direction on a large scale at several important works. The statement that gas for motor purposes was cheaper than electricity by more than 50 per cent., as illustrated by gas motor street railways at several European points, scarcely brought an inquiry, though fully written up, and illustrated by spot photographs, many months ago in the AMERICAN GAS LIGHT JOURNAL. That 1 pound of coal converted into gas, and then into power by means of a gas engine, can evolve 1-horse power—a thing which cannot be done by the best steam engine ashore or afloat—is not nearly so well known, as that we can induce people to take a $12 gas range (if we also furnish the connections free), use it for a few months and then return the range fit only for the scrap heap. Because the thing is not understood, its far reaching importance is entirely overlooked, even by men otherwise famous for their ability to create values out of unpromising but existing futures. And sometimes, for the same reason, it is ridiculed. Why should we advertise our business? Not because a range can be put in for so much or so little money, but because we can sell the gas that goes to the consumer through the range at such a price. Are we stove sellers; or are we manufacturers and sellers of a product that will live when the stove is dead?"

MR. B. C. COBB, we understand, is to be Manager of the Saginaw (Mich.) Gas Company; and that Mr. A. P. Ewing will take Mr. Cobb's place at Detroit.

MR. C. J. DIXON has been granted the exclusive right, for a term of 50 years, to supply gas in the district of South Milwaukee, Wis. He is entitled to charge therefor a maximum selling rate of $1.60 per 1,000. The rate is all right, but we think South Milwaukee will not have much gas for many years to come, unless a shift is made in the nominal present plan.

"J. R.," writing from San Francisco, Cal., under date of April 8th, says: "We out this way are all pleased to know that Mr. W. E. Osborne has been appointed Nevada City Manager of the Nevada County Gas and Electric Company. The only trouble with Osborne, however, may be that he does not quite understand the profit there is in gas as between electricity."

AT the annual meeting of the Rome (N. Y.) Gas Light Company the Directors chosen were: Edward Comstock, John D. McMahon, W. R. Huntington, T. H. Stryker and F. M. Shelley.

THE gas, water and electric light interests of Selma, Cal., have been consolidated. The concern is to be known as the Selma Light and Water Company, and Messrs. Brownstone, Snodgrass and Shafer are presumed to be the people in control.

THE American Bridge Company will make quite an elaborate building exhibit at the Pan-American Exposition, furnishing 2 buildings each about 60 feet in width, and 150 feet in length. One of the buildings will be of extremely plain construction, being designed for use as a manufacturing plant. The second, however, will be of ornamental design, such as would naturally be used for freight depots, street car barns and others of that class. The American Bridge Company will also make an extensive exhibit of parts of large bridges.

Labor Troubles in the English Coal Trade.

The *Journal of Gas Lighting* says: The labor troubles of the coal trade are beginning. We, of course, do not mean to say that the coal trade has had no labor troubles in the past, or that it is ever really free of them, but that the period of comparative freedom from stoppages that has prevailed since the South Wales trouble in 1898, appears to be coming to an end with the close of the season of extraordinary prosperity that the coal owners and miners have been enjoying since the autumn of 1899. At the time of writing, from 25,000 to 30,000 miners are idle in Lanarkshire in consequence of the engine keepers going on strike for an 8-hours instead of a 12-hours day. Some collieries have conceded the terms asked, which include no reduction in wages in consequence of shorter hours. The others have offered 10 hours; and whether the strike will be of considerable duration remains to be seen. It is worthy of note, as showing the difference in the coal trade situation to day as compared with 18 months since, that, whereas when the enginemen in South Wales went on strike in September, 1899, the miners refused to assist them in any way, so that the strike promptly collapsed, in the present case the miners are actively co-operating with the men above bank. It is, in fact, useless for the colleries to employ other men to work their engines, as the miners have resolved not to descend any of the pits while the dispute remains unsettled.

The explanation of the difference in the attitude of the miners on the two occasions is to be found in the fact that in the autumn of 1899 the coal trade was "booming," and wages were on the up grade; while now the market has fallen all to pieces, and the miners in Scotland have already had to consent to a reduction in wages. Those reduced rates only hold until the end of this month, and the men are fully aware of the probability of being then asked to accept a further reduction, especially in view of the considerable fall in wages regulated by the Northumberland Coal Trade Conciliation Board. They undoubtedly imagine that by the stoppage of hewing necessitated by the present strike—involving a shrinkage of about 150,000 to 200,000 tons per week in the output—prices may be hardened, and the fall in wages averted. We do not think their expectations will be fulfilled to any great extent, as the immediate consequence of the strike has been the closing of a large number of iron and steel works, the owners of which, unable to get cheap supplies from the pits near at hand, do not, in the present position of trade, feel justified in obtaining fuel supplies at higher cost from collieries farther afield.

In Wales, the Clydach Vale dispute drags out from week to week—over 1,000 men being now idle. At the Wearmouth Colliery, 1,500 miners have handed in their notices because 10 of their fellows refuse to join the Union (we fancy we have heard at some time of the strong objection that the working man has to "interference with the liberty of the subject"); while the men everywhere intend apparently to "play" for a more than usually long time this Easter. Labor, in the collieries at any rate, appears to have lost none of its ignorance or disregard of its true interests. Despite, however, anything the miners may do, it is impossible for the price of coal to do anything but fall in the coming months. The terms upon which the gas coal contracts in Yorkshire and Lancashire are settled will afford a good indication of the position; and the result of the struggle between the buyers and the collieries is evidently being awaited in the trade with some anxiety. Reviewing the position, a writer in the leading trade journal says: "With regard to gas coal contracts, although a reduction of not more than 2s. 6d. per ton is talked of, this is already being regarded as unlikely to meet the situation. Possibly collieries may not have to give way to the same extent as in locomotive fuel; but it is tolerably certain that the gas coal contracts will only be secured to a very partial extent unless a more substantial reduction than 2s. 6d. per ton is conceded." We do not think that the collieries will allow those contracts to be placed elsewhere. Customers are not so easily found for surplus supplies as they were this time last year.

THE AMERICAN GAS LIGHT JOURNAL

A. M. CALLENDER & CO.,
PROPRIETORS.

THOS. J. CUNNINGHAM,
ELBERT P. CALLENDER,
EDITORS.

CHAS. E. SANDERSON,
MANAGER.

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Notification Respecting Advertising.—Orders for new advertising, or for changes in standing advertisements, to insure attention in the issue following their reception, must be in hand any time of Wednesday.

AGENTS:

New York—American News Co. 39 and 41 Chambers St.
Germany—Lemcke & Buechner, of New York.
England—Aug. Siegle, 30 Lime Street, London.

MONDAY, APRIL 22, 1901.

The Market for Gas Securities.

The dealings in Consolidated gas continued on a fairly large scale during the week, the quotations in the interim at one time reaching a figure that has not been reached since September, 1897. To-day (Friday) the opening was made at 232½ to 233, and, on sales of about 13,000 shares, the closing was 233½ to 234. The title to the "land under water" at Astoria has been made "perfectly clear," through a decision by the final legal authority of the State, and it looks that the Queens Borough controllers will not insist on certain street openings at Astoria through the Consolidated Company's property at that point. In fact, it was never seriously thought that they would. Important developments, in the instance of the final deal, should transpire early in May.

The real feature of the week, though, in city gas shares was an advance of at least 30 points in the bid price for Mutual. It is quoted at 325 to 350; but the latter figure seems even ridiculously low for it. Standard common is quite sluggish, but it will go very much higher when the outstanding shares are really needed.

Brooklyn Union made a high record price during the week, but despite an advance of 50 points or more in the last 3 months it is cheap at the quoted rates. Peoples, of Chicago, moved up smartly, and if ordinary indications count for anything it should speedily cross the 120 mark. Baltimore Consolidated gains steadily; Syracuse (N. Y.) shows some strength, and Lacledes are a trifle more than holding their own. Gas bonds of any standing whatever find ready sale.

Gas Stocks.

Quotations by George W. Close, Broker and Dealer in Gas Stocks.

16 WALL STREET, NEW YORK CITY.

APRIL 22.

☞ All communications will receive particular attention.
☞ The following quotations are based on the par value of $100 per share.

N. Y. City Companies.	*Capital.*	*Par.*	*Bid.*	*Asked.*
Consolidated	$73,177,000	100	233¼	234
Central Union, Bonds, 5's.	3,000,000	1,000	106½	107
Equitable Bonds, 6's	1,000,000	1,000	105	..
" 1st Con. 5's	2,300,000	1,000	120	..
Metropolitan Bonds	658,000	..	108	112
Mutual	3,500,000	100	325	350
" Bonds	1,500,000	1,000	100	102
Municipal Bonds	750,000	.	..	..
New Amsterdam Gas Co.. Bonds, 5's	11,000,000	1,000	109	110
Northern Union, Bonds, 5's.	1,250,000	1,000	104	104¼
New York and East River.. Bonds 1st 5's	3,500,000	1,000	111	113
" 1st Con. 5's	1,500,000	..	106	108
Richmond Co., S. I.	348,650	50	70	..
" Bonds	100,000	1,000	..	
Standard	5,000,000	100	130	132
Preferred	5,000,000	100	149	151
Bonds, 1st Mortgage, 5's	1,500,000	1,000	116	114
Yonkers	299,620	500	130	.
Out-of-Town Companies.				
Brooklyn Union	15,000,000	100	223	225
" " Bonds (5's)	15 000,000	1,000	118	119
Bay State	50,000,000	50	1	1⅛
" Income Bonds	2,000,000	1,000	..	75
Binghamton Gas Works	450,000	100	25	26½
" 1st Mtg. 5's	500,000	1,000	92½	95
Boston United Gas Co.— 1st Series S. F. Trust	7,000,000	1,000	82	85
2d " " "	3,000,000	1,000	47½	50
Buffalo City Gas Co.	5,500,000	100	8	10
" " Bonds, 5's	5,250,000	1,000	75	76½
Capital, Sacramento	500,000	50	..	35
Bonds (6's)	150,000	1,000		
Central San Francisco	2,000,000	..	106	108
Chicago Gas Co. Guaranteed Gold Bonds	7,650,000	1,000	104	104¼
Cincinnati G. & C. Co.	8,500,000	100	199	199½
Columbus (O.) Gas Co., 1st Mortgage Bonds	1,500,000	1,000	106	107
Columbus (O.) Gas Lt. & Heating Co	1,682,750	100	60	65
Preferred	3,026,500	100	84	86
Consumers, Jersey City Bonds	600,000	1,000	102	103
Consumers, Toronto	1,700,000	50	215	216
Consolidated, Baltimore	11,000,000	100	61⅝	62
Mortgage, 6's	3,600,000	..	..	118
Chesapeake, 1st 6's.	1,000,000	..	..	..
Equitable, 1st 6's.	910,000	..	..	..
Consolidated, 1st 5's	1,490 000	..	..	112
Consolidated Gas Co. of N.J.	1,000,000	100	12½	14½
" Con. Mtg. 5's	380,000	1,000	81½	83
Consolidated G. & E. Co.'s., Little Falls, N.Y.	90,000	100	..	100
Bonds	75,000	..	..	100
Detroit City Gas Co	4,825,500	50	88	89
" Prior Lien 5's	5,603,000	1,000	99½	100
Detroit Gas Co., 5's	381,000	1,000	..	89
" Inc. 5's	16,000	100	94	94½
Equitable Gas & Fuel Co., Chicago, Bonds	2,000,000	1,000	..	101
Essex and Hudson Gas Co.	6,500,000	..	35	40
Fort Wayne	2,000,000	..	35	41
" Bonds	2,000,000	..	54	58
Grand Rapids Gas Lt. Co..	1,000,000	50	103	105
" 1st Mtg. 5's	1,225,000	1,000	..	..
Hartford	750,000	25	240	250
Hudson County Gas Co., of New Jersey	10,500,000	..	25	..
" Bonds, 5's	10,500,000	..	101	103
Indianapolis	2,000,000	..	48	58
" Bonds, 6's	2 650,000	..	94⅞	98
Jackson Gas Co	250,000	50	70	75
" 1st Mtg. 5's	290,000	1,000	101	102½
Kansas City Gas Light Co., of Missouri	5,000,000	100	..	36
Bonds, 1st 5's	3,822,000	1,000	101½	103
Laclede, St. Louis	10,000,000	100	85	86
Preferred	2,500,000	100	98	100
Bonds	10,000,000	1,000	108½	109
Lafayette Gas Co., Ind.	1,000,000	100	55	60
Bonds	1,000,000	1,000	56	58
Louisville	2,570,000	50	110	120
Madison Gas & Elec. Co.	400,000	100	64	67
" 1st Mtg. 6's	350,000	1,000	102½	108
" 6 per cent. scrip, due 1910	100,000	25	87	89
Montreal, Canada	2,000,000	100	182	184¾
Newark, N. J., Con. Gas Co	6,000,000	..	..	55
Bonds, 6's	4,600,000	..	..	103
New Haven	1,000,000	25	280	300
Nashville Gas Lt. Co.	1,000,000	50	110	..
Oakland, Cal.	2,000,000	..	46	47
" Bonds	750,000	..	..	..
Peoples G. L. & Coke Co., of Chicago	25,000,000	100	115½	115¾
Peoples Gas Lt. & Coke Co., Chicago, 1st Mortgage	20,100,000	1,000	..	..
2d "	2,500,000	1,000	104	
Rochester Gas & Elec. Co..	2,150,000	50	88	..
Preferred	2,150,000	50	118	..
Consolidated 5's	2,000,000	..	87½	90
San Francisco, Cal.	10,000,000	100	47¼	47½
St. Paul Gas Light Co	1,500,000	100	45	47
1st Mortgage 6's	650,000	1,000	82	85
Extension, 6's	600,000	1,000	..	..
General Mortgage, 5's..	2,465,000	1,000	88	90½
St. Joseph Gas Co	1,000,000	100	36	39
" 1st Mtg. 5's	751,000	1,000	96½	98
Syracuse, N. Y.	1,750,000	100	18	22
Bonds	1,612 000	1,000	83½	93
Washington, D. C	2,600,000	20	30⅞	31⅛
First mortgage 6's	600,000	..	.	..
Western, Milwaukee	4,000,000	100	100	101¼
Bonds, 5's	4,000,000	..	106½	107½
Wilmington, Del.	600,000	50	200	201

Advertisers' Index.

GAS ENGINEERS. Page

Wm. Henry White, New York City 635
Fred. Bredel, Milwaukee, Wis. 622
Geo. R. Rowland, New York City 633
The Western Gas Construction Co., Fort Wayne, Ind. 640
Humphreys & Glasgow, New York City 638
American Gas Co., Phila., Pa. 622
David Leavitt Hough, New York City 622
Economical Gas Apparatus Construct'n Co., Toronto, Ont. 619
Baxter & Young, Detroit, Mich. 632
United Gas Improvement Co., Phila., Pa. 627
James T. Lynn, Detroit, Mich. 632
A. E. Boardman, Brevard, N. C. 632
The Jeffrey Manufacturing Co., Columbus, O. 637

GAS WORKS APPARATUS AND CONSTRUCTION.

Continental Iron Works, Brooklyn, N. Y. 631
Deily & Fowler, Phila., Pa. 636
Kerr Murray Mfg. Co., Fort Wayne, Ind. 632
Stacey Mfg. Co., Cincinnati, Ohio. 635
Bartlett, Hayward & Co., Baltimore, Md. 633
Davis and Farnum Mfg. Co., Waltham, Mass. 632
R. D. Wood & Co., Phila., Pa. 63
Isbell-Porter Company, New York City 634
Fred. Bredel, Milwaukee, Wis. 622
United Gas Improvement Co., Phila., Pa. 627
Economical Gas Apparatus Construct'n Co., Toronto, Ont. 619
The Western Gas Construction Co., Fort Wayne, Ind. 640
Humphreys & Glasgow, New York City 631
American Gas Co., Phila., Pa. 622
Logan Iron Works, Brooklyn, N. Y. 636
Riter-Conley Mfg. Co., Pittsburgh, Pa. 635
Baxter & Young, Detroit, Mich. 632
American Bridge Co., New York City 618
G. Shepard Page's Sons, New York City 632
James T. Lynn, Detroit, Mich. 632
A. E. Boardman, Brevard, N. C. 632
Sutherland Construction & Improvement Co., N.Y. City 619
Christopher Cunningham, Brooklyn, N. Y. 624
The Jeffrey Manufacturing Co., Columbus, O. 637
Quintard Iron Works, New York City 617

PROCESSES.

Bartlett, Hayward & Co., Baltimore, Md. 633
United Gas Improvement Co., Phila., Pa. 627
Burdett Loomis, Hartford, Conn. 634
Economical Gas Apparatus Construct'n Co., Toronto, Ont. 619
The Western Gas Construction Co., Fort Wayne, Ind. 640
Humphreys & Glasgow, New York City 624
Sutherland Construction & Improvement Co., N.Y. City 619
B. E. Chollar, St. Louis, Mo. 618

SCRUBBERS AND CONDENSERS.

R. D. Wood & Co., Phila., Pa. 634
Continental Iron Works, Brooklyn, N. Y. 634
Logan Iron Works, Brooklyn, N. Y. 636
Riter-Conley Mfg. Co., Pittsburgh, Pa. 635

TAR AND CARBONIC ACID EXTRACTOR.

The Western Gas Construction Co , Fort Wayne, Ind.... 640

AMMONIA CONCENTRATORS.

Michigan Ammonia Works, Detroit, Mich..... 630
American Gas Company, Phila., Pa..... 622
The Western Gas Construction Co., Fort Wayne, Ind.... 640

GAS METERS.

John J. Griffin & Co., Phila., Pa..... 600
American Meter Co., New York and Philadelphia..... 639
Helme & McIlhenny, Phila., Pa..... 639
D. McDonald & Co., Albany, N.Y..... 637
Nathaniel Tufts Meter Co., Boston, Mass..... 638
Maryland Meter and Mfg. Co., Baltimore, Md..... 638
Metric Metal Co., Erie, Pa 639
Keystone Meter Co., Royersford, Pa..... 638
Detroit Meter Company, Detroit, Mich..... 639

PREPAYMENT METERS.

American Meter Co.. New York and Philadelphia..... 639
John J. Griffin & Co., Phila., Pa..... 600
D. McDonald & Co., Albany, N. Y..... 637
Helme & McIlhenny, Phila., Pa..... 639
Nathaniel Tufts Meter Co., Boston, Mass..... 638

GAS AND WATER PIPES.

M. J. Drummond & Co., New York City..... 624
R. D. Wood & Co., Phila., Pa..... 634
Warren Foundry and Machine Co., New York City..... 624
Donaldson Iron Co., Emaus, Pa..... 624
Christopher Cunningham, Brooklyn, N. Y..... 624

PIPE WRENCHES.

Atlas Pipe Wrench Company, New York City..... 624

(Concluded on page 617.)

A Practical Expert

On Coal, Water Gas or Electric Light,

Will render his services to any small or medium size company, for one day or one month, at very moderate rates, and guarantee better results obtained at the works and a less percentage of waste or leakage in street mains. For further particulars, address, "W. H. S.,"

1350-3 Care this Journal.

Position Wanted.

An expert gas meter man desires a position with gas company. Is a practical gasfitter, understands the placing of gas stoves and fixtures, and is competent to take up complaint work, etc. Can furnish best of references from present employers. Address, "B. H.,"

1350-1 Care this Journal.

Position Wanted

As Superintendent of Small Coal Gas Works,

By a man who has been for 26 years Superintendent of gas works Has had very good success in selling gas stoves.

1349-3 Address, "A. B.," care this Journal.

Engagement Desired.

A capable, energetic business man, seven years' experience, Secretary and Treasurer, managing business of a company with output of 2,000,000 per year, desires engagement with larger company in position of trust and responsibility. Satisfactory reasons and testimonials given, if desired.

1348-4 Address, "GAS," care this Journal.

WANTED,

A PRACTICAL MECHANIC.

Must be a good gasfitter and capable of doing street main and service work. Steady work by the month or year. Good wages paid. Send applications to the

BELLINGHAM BAY GAS COMPANY,

1349-tf Whatcom, Wash.

WANTED,

SECOND-HAND STATION METER.

Four feet diameter, 8-inch connections.

Address, SALISBURY GAS AND ELECTRIC LIGHT CO.,

1350-1 Salisbury, N. C.

WANTED,

A COMPETENT MAN, about 40 years of age, strictly temperate, and single, with full knowledge of the Lowe water gas system, to fill the position of working manager in a moderate sized gas plant, located in Mexico. One from the Southern States, or having lived in Cuba or Puerto Rico (immune) preferred. Must possess some knowledge of office work. To the right man, and one not afraid of work, a good future is assured. Comfortable living apartments in the suburbs, free. Address. "B.,"

1350-1 Care this Journal.

Apparatus Wanted.

WANTED—A 6-foot or 7-foot water gas apparatus complete. Address, stating full particulars, etc.,

1349-2 "A. B. C.," care this Journal.

FOR SALE.

One Six-Inch, Automatic Connelly Street Governor, in good condition.

Address C. M. KELLER,

1320-tf Columbus, Ind

FOR SALE.

One 4-foot Lowe water gas set, with scrubbers, condensers, engine, blower, boilers, pumps etc.
One 4-foot Station Meter.
Two Purifying Boxes, 7 feet by 8 feet 6 inches by 2 feet 6 inches.
One Holder, 25,000 cubic feet capacity.
One No 2 Roots' Exhauster, with engine.

All in first-class condition. Address,

CHARLES THOMAS.

1349-tf Flushing, L. I.

TAR FOR SALE.

10,000 GALLONS COAL TAR FOR SALE.

Address, CITY LIGHT AND HEAT CO.,

1350-1 FOSTORIA, O.

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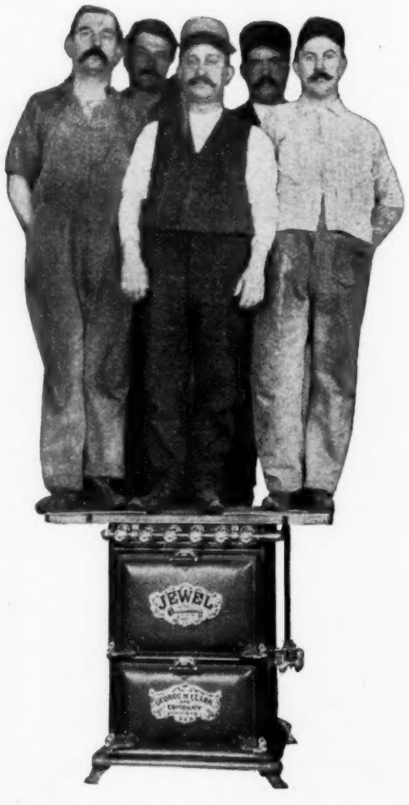

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(*Continued from page 616.*)

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GAS TAPPING MACHINES.

George Light, Dayton, O..... 637
H. Mueller Manufacturing Company, Decatur, Ills 630

GAS COALS.

Penn Gas Coal 631
Perkins & Co., New York City 630
Despard Gas Coal Co., Baltimore, Md..... 631
Westmoreland Coal Co., Phila., Pa..... 631
Berwind-White Coal Mining Co., New York and Phila... 630

CANNEL COALS.

Perkins & Co., New York City 630

CONVEYORS.

The Link-Belt Machinery Co., Chicago, Ills..... 621
The Western Gas Construc ion Co., Fort Wayne, Ind . 640
The Jeffrey Manufacturing Co., Columbus, O..... 637

GAS ENRICHERS.

Standard Oil Co., New York City 591
The Sun Oil Co., Pittsburgh, Pa..... 631

COKE CRUSHER.

C. M. Keller, Columbus, Ind..... 631

STEAM BLOWER FOR BURNING BREEZE.

H. E. Parson, Brooklyn, N. Y..... 621

GAS GAUGES.

The Bristol Co., Waterbury, Conn..... 621

GAS GOVERNORS.

Connelly Iron Sponge and Governor Co., New York City 629
Isbell-Porter Co., New York City..... 634
R. D. Wood & Co., Phila., Pa..... 634

CEMENTS.

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Bartlett, Hayward & Co., Baltimore, Md..... 633
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Continental Iron Works, Brooklyn, N.Y..... 634
Logan Iron Works, Brooklyn, N. Y..... 636
R. D. Wood & Co., Phila., Pa..... 634

CHIMNEY CONSTRUCTION.

Adam Weber Sons, New York City..... 629

INCANDESCENT GAS LAMPS.

Welsbach Company, Gloucester, N.J..... 625
Kern Incandescent Gas Light Co., New York City.. ... 620

BURNERS.

C. A. Gefrorer, Phila., Pa..... 634
Wm. M. Crane Co., New York City 621
D. M. Steward Mfg. Co., Chattanooga, Tenn..... 621

LAVA GAS TIPS.

D. M. Steward Mfg. Co., Chattanooga, Tenn 621

STREET LAMPS.

Welsbach Street Lighting Co., New York and Phila..... 626
Thos. T. W. Miner, New York City..... 630

PURIFIERS.

R. D. Wood & Co., Phila., Pa..... 624
Stacey Mfg. Co., Cincinnati, O..... 618

PURIFYING MATERIALS.

Connelly Iron Sponge and Governor Co., New York City 629

VALVES.

Ludlow Valve Manufacturing Co., Troy, N.Y..... 621
R. D. Wood & Co., Phila., Pa..... 634
Continental Iron Works, Brooklyn, N. Y..... 634
The P. H. & F. M. Roots Co., Connersville, Ind..... 623
Isbell-Porter Co., New York City 634
The Western Gas Construction Co., Fort Wayne, Ind.... 640
Kerr Murray Mfg. Co., Fort Wayne, Ind. 632

EXHAUSTERS.

The P. H. & F. M. Roots Co., Connersville, Ind..... 623
Isbell-Porter Company, New York City..... 634
Connelly Iron Sponge and Governor Co., New York City 629
Kerr Murray Mfg. Co., Fort Wayne, Ind. 622

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PURIFIER SCREENS.

John Cabot, New York City. 621

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American Meter Co., New York and Philadelphia..... 625
Maryland Meter and Manufacturing Co., Baltimore, Md. 638
Keystone Meter Co., Royersford, Pa..... 638
Nathaniel Tufts Meter Co., Boston Mass..... 638
Wm. M. Crane Co., New York City..... 577
George M. Clark & Co., Chicago, Ills..... 616
Detroit Stove Works, Detroit-Chicago..... 576
Abendroth Bros., New York City 617

GASHOLDER TANKS.

J. P. Whittier, Brooklyn, N. Y..... 633

GASHOLDERS.

Bartlett, Hayward & Co., Baltimore, Md..... 633
Continental Iron Works, Brooklyn, N. Y..... 634
Deily & Fowler, Philadelphia, Pa..... 636
Davis & Farnum Mfg. Co., Waltham, Mass..... 632
Kerr Murray Mfg. Co., Fort Wayne, Ind..... 632
Stacey Mfg. Co., Cincinnati, Ohio..... 635
R. D. Wood & Co., Philadelphia, Pa..... 634
Logan Iron Works, Brooklyn, N. Y 636
Riter-Conley Mfg. Co., Pittsburgh, Pa..... 635

STORAGE TANKS.

Christopher Cunningham, Brooklyn, N. Y..... 624

GAS SECURITIES.

Henry Marquand & Co., New York City..... 617

AUDITORS AND ACCOUNTANTS.

The J. Dobson Good Audit Company, New York City.. . 617

BOOKS, ETC.

Newbigging's Handbook..... 638
Field's Analysis, 1899..... 636
Digest of Gas Cases..... 631
Gas Flow Computers..... 631
Gas Engineer's Laboratory Handbook..... 629
Excerpts from Reports of Gas Commissioners..... 599
Binders..... 624
Directory of Gas Companies..... 625
Practical Hints on Regenerator Furnaces..... 629
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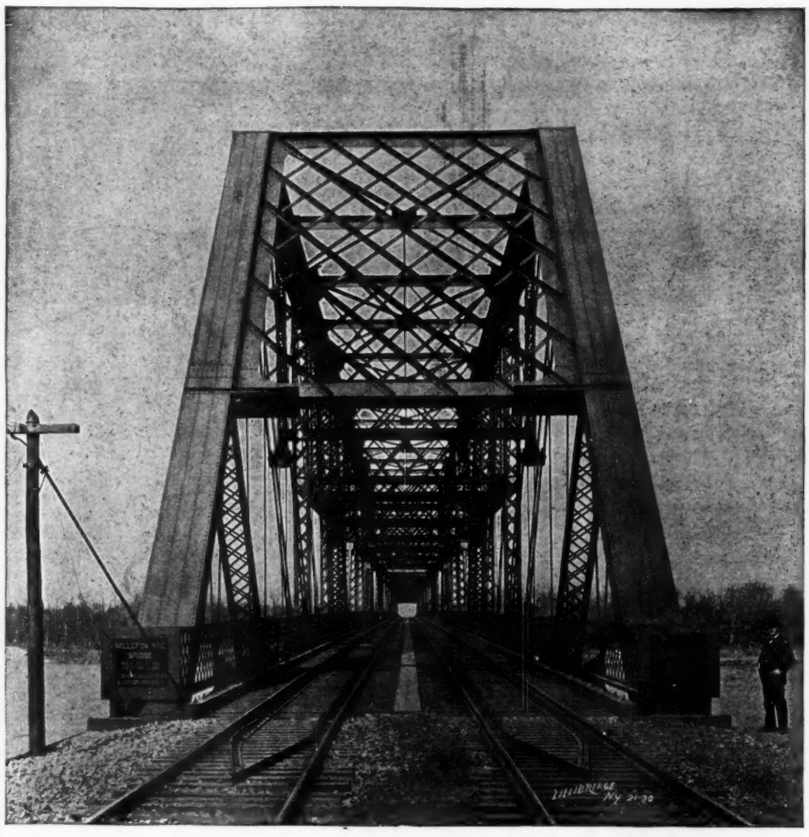

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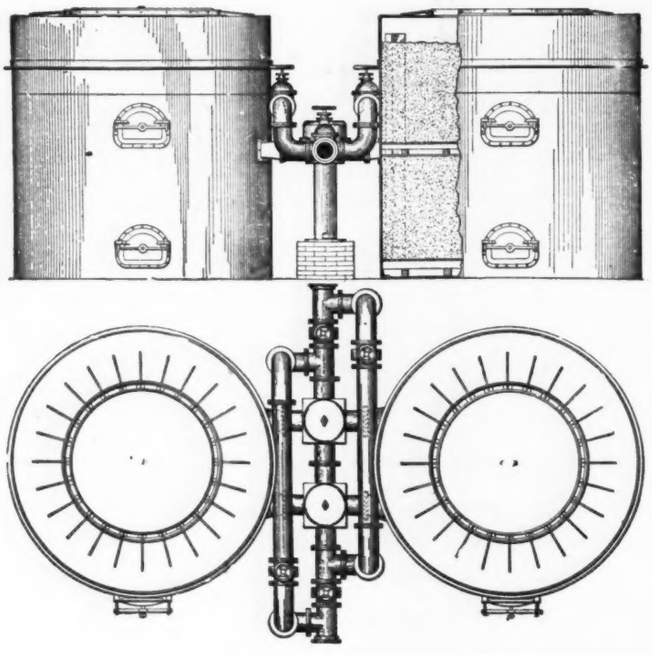

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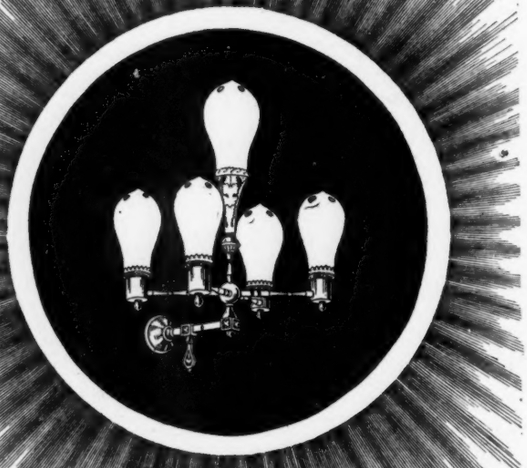

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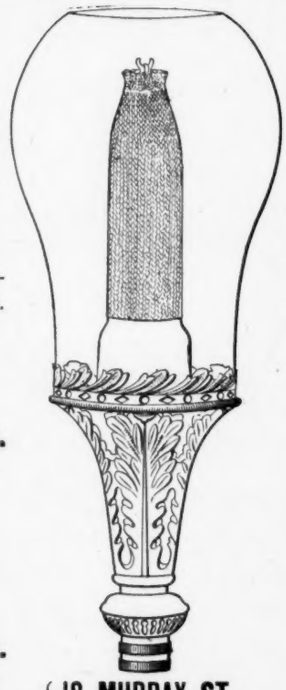

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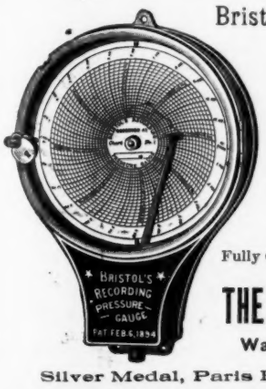

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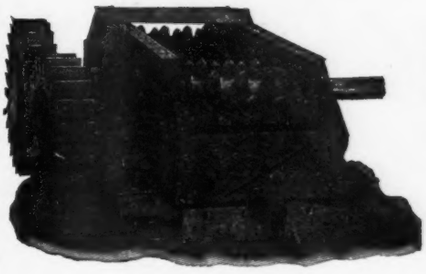

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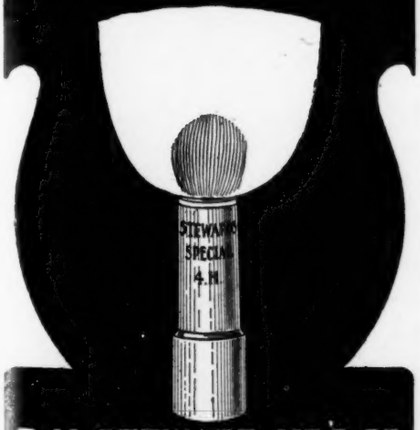

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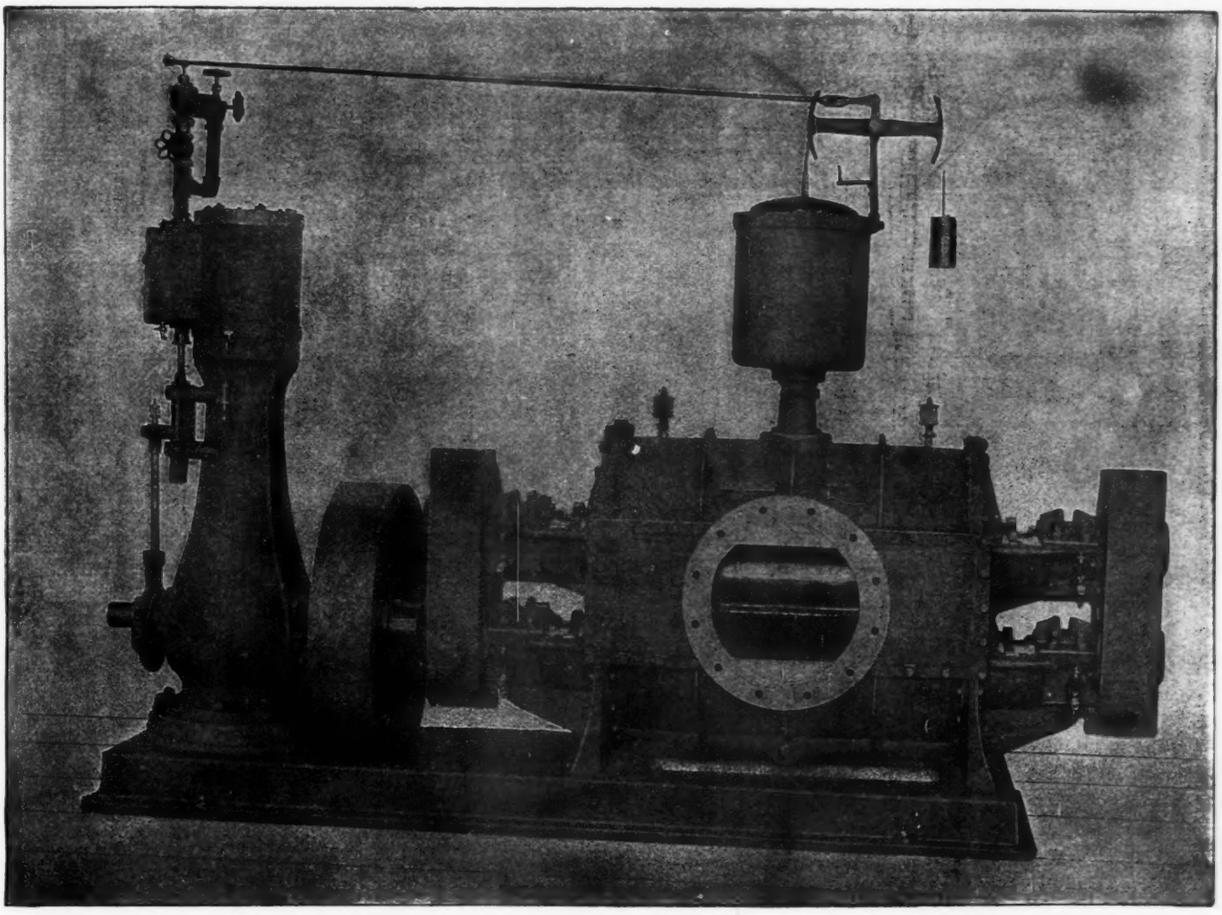

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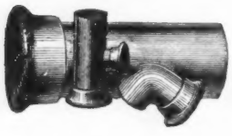

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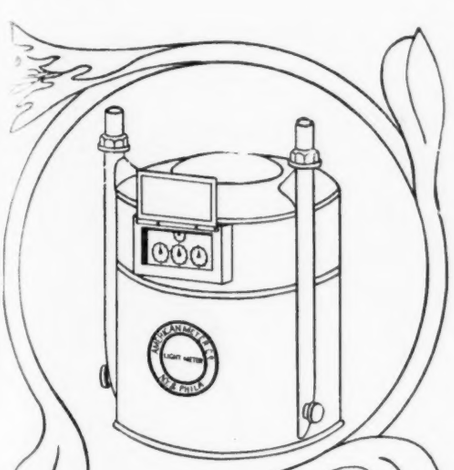
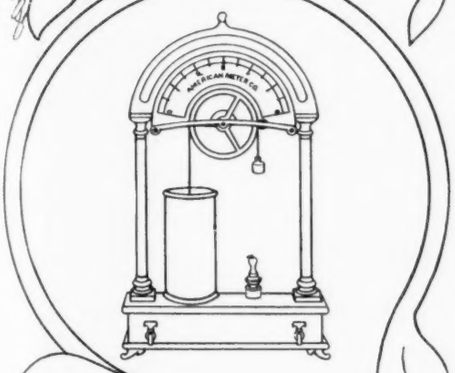
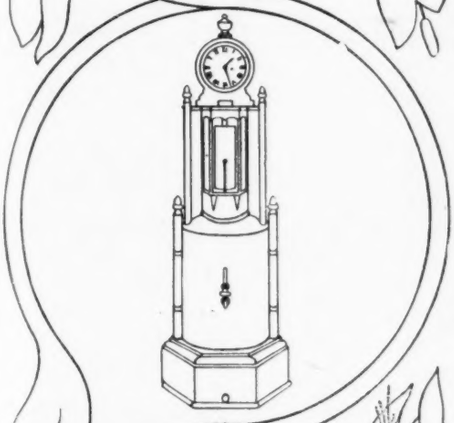
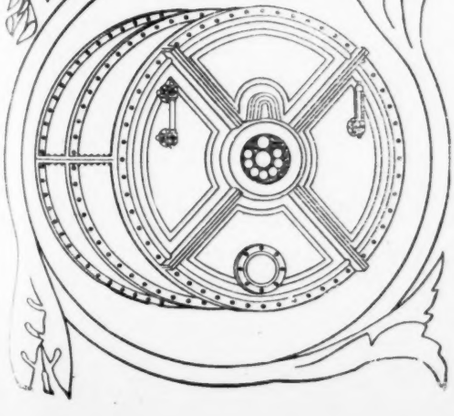








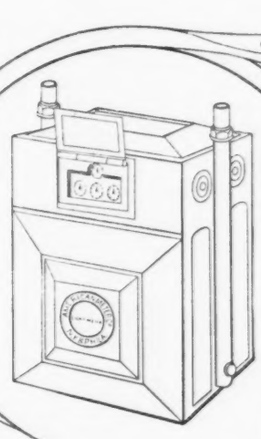
PUBLIC LIGHTING TABLE.

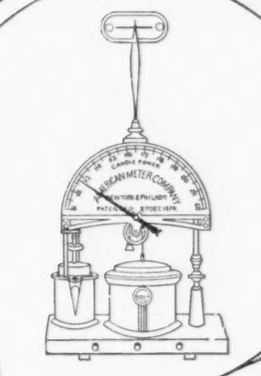
MAY, 1901.

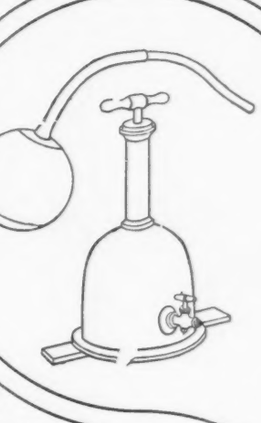
Day of Week.	Table No. 1. Following the Moon. Date.	Light.	Extinguish.	Table No. 2. New York City. All Night Lighting. Light.	Extinguish.
				P.M.	A.M
Wed.	1	3.10 AM	4.00 AM	6.45	4.00
Thu.	2	No L.	No L.	6.45	4.00
Fri.	3	No L. FM	No L.	6.45	4.00
Sat.	4	No L.	No L.	6.45	4.00
Sun.	5	7.30 PM	9.50 PM	6.45	4.00
Mon.	6	7.30	10.40	6.45	4.00
Tue.	7	7.30	11.30	6.55	3.40
Wed.	8	7.30	12.10 AM	6.55	3.40
Thu.	9	7.30	12.50	6.55	3.40
Fri.	10	7.30	L.30	6.55	3.40
Sat.	11	7.30 LQ	2.00	6.55	3.40
Sun.	12	7.40	2.40	6.55	3.40
Mon.	13	7.40	3.10	6.55	3.40
Tue.	14	7.40	3.40	7.00	3.30
Wed.	15	7.40	3.40	7.00	3.30
Thu.	16	7.40	3.40	7.00	3.30
Fri.	17	7.40 NM	3.40	7.00	3.30
Sat.	18	7.40	3.40	7.00	3.30
Sun.	19	7.40	3.40	7.00	3.30
Mon.	20	7.40	3.40	7.00	3.30
Tue.	21	7.40	3.40	7.10	3.15
Wed.	22	10.20	3.40	7.10	3.15
Thu.	23	10.50	3.40	7.10	3.15
Fri.	24	11.20 FQ	3.40	7.10	3.15
Sat.	25	11.50	3.40	7.10	3.15
Sun.	26	12.20 AM	3.30	7.10	3.15
Mon.	27	12.50	3.30	7.10	3.15
Tue.	28	1.10	3.30	7.15	3.15
Wed.	29	1.50	3.30	7.15	3.15
Thu.	30	2.20	3.30	7.15	3.15
Fri.	31	No L.	No L.	7.15	3.15

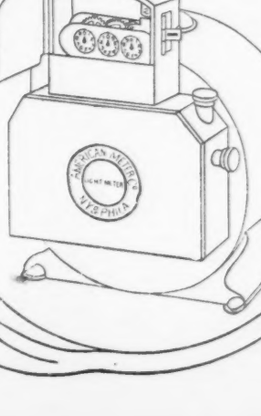
TOTAL HOURS LIGHTING DURING 1901.

By Table No. 1.	Hrs.Min.	By Table No. 2.	Hrs.Min.
January	220.10	January	423.20
February	192.30	February	355.25
March	180.00	March	355.35
April	158.30	April	298.50
May	140.40	May	264.50
June	135.40	June	234.25
July	138.00	July	243.45
August	156.20	August	280.25
September	174.40	September	321.15
October	202.30	October	374.30
November	220.40	November	401.40
December	241.30	December	433.45
Total, yr.	2161.10	Total, yr.	3987.45









NEW YORK, 33 Nassau St. PHILADELPHIA, Broad and Arch Sts. CHICAGO, 54 Lake St.

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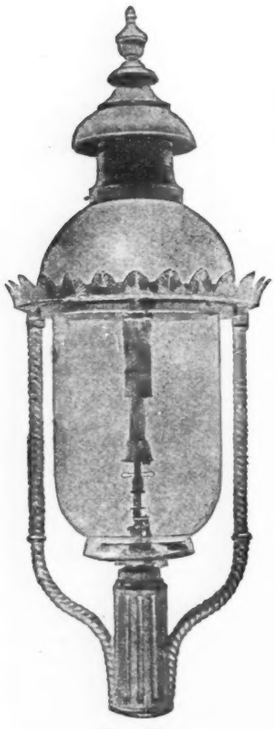
.... OF AMERICA ....



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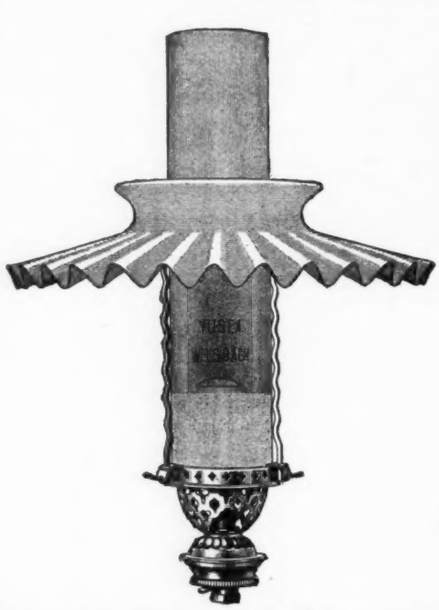
EVER EXHIBITED.



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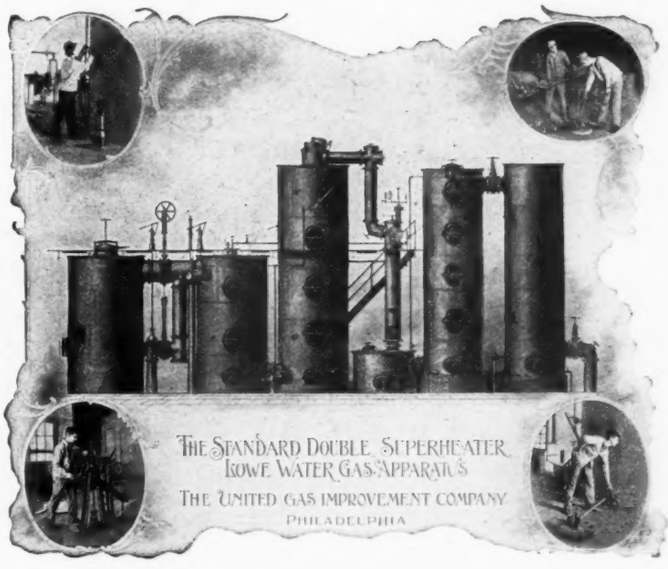
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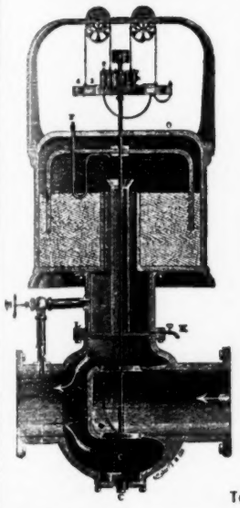

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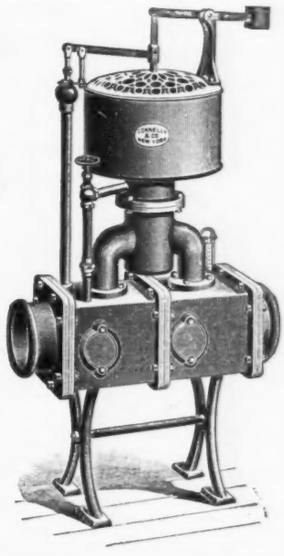

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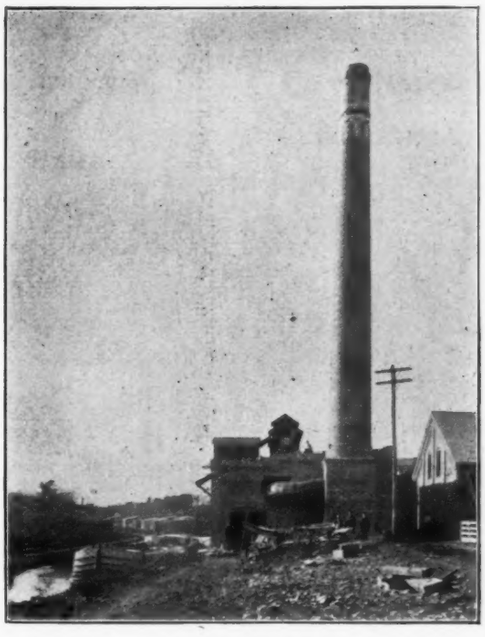

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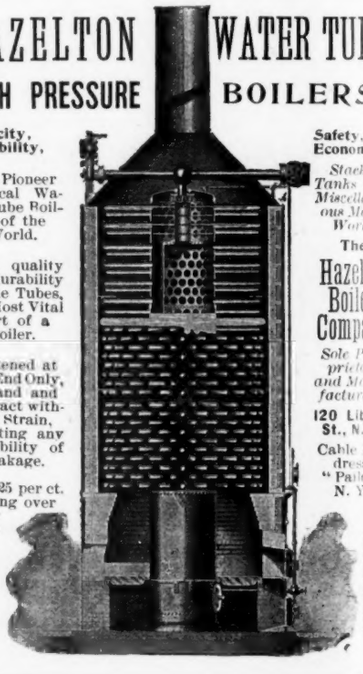

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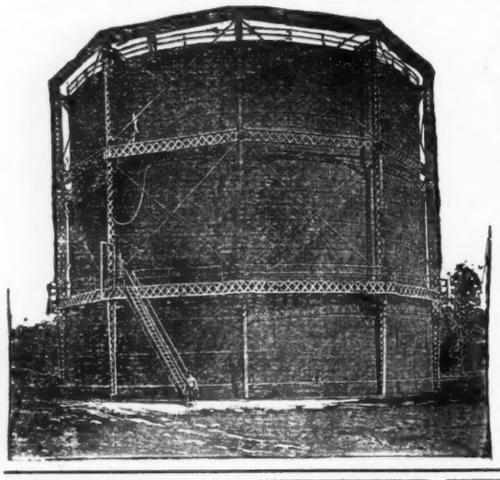

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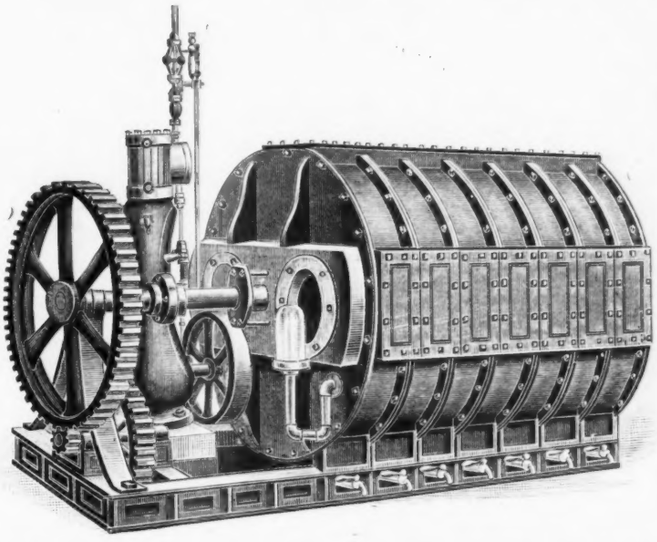

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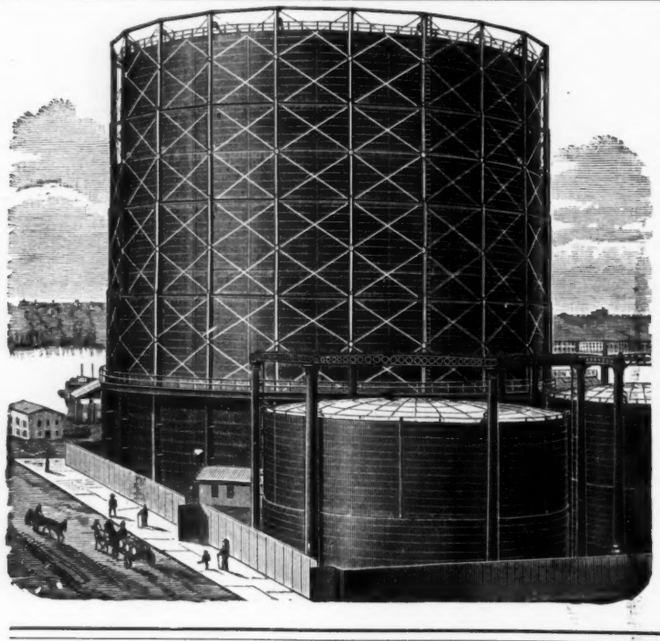

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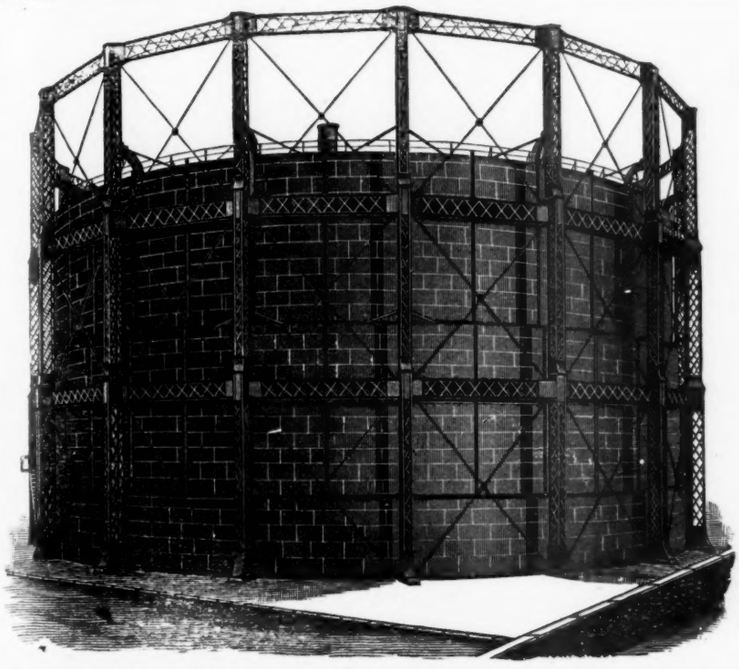

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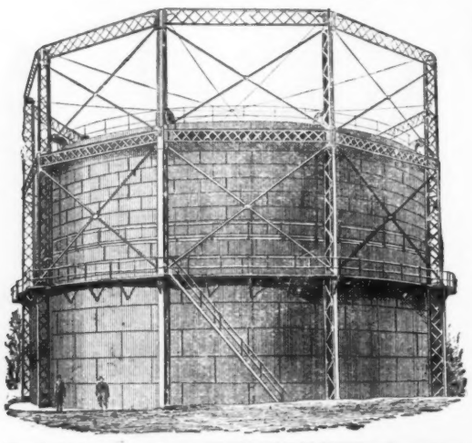

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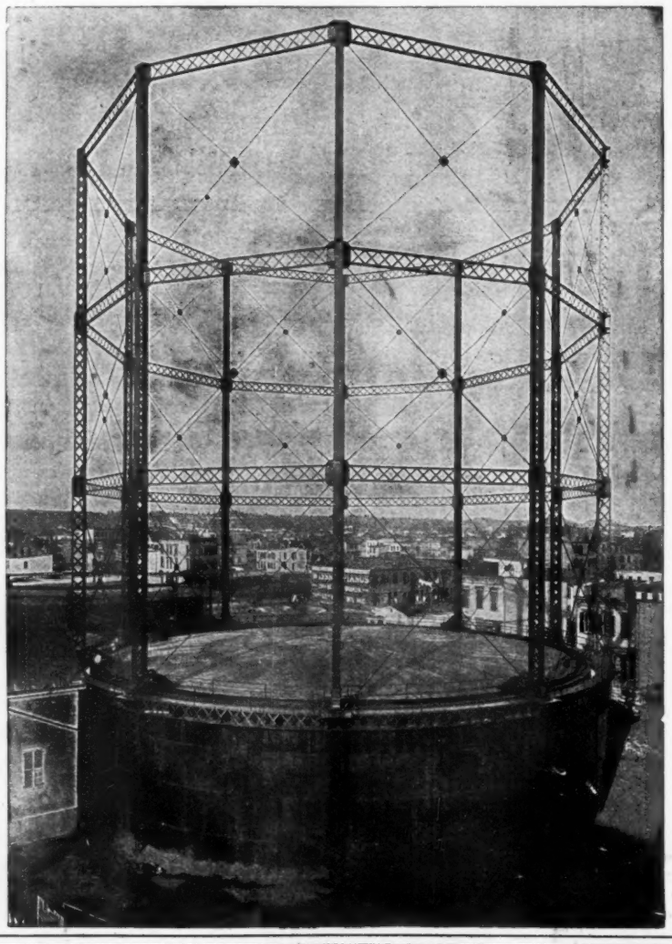

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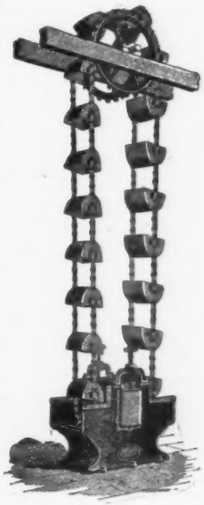

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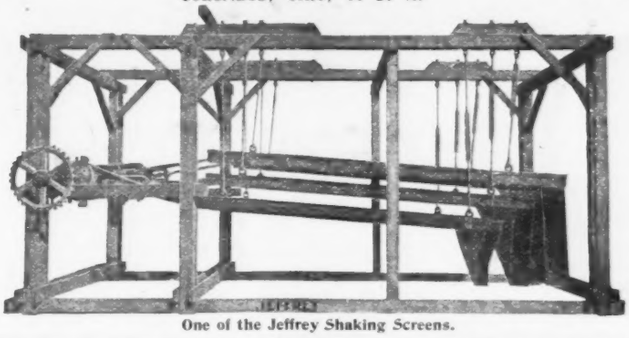

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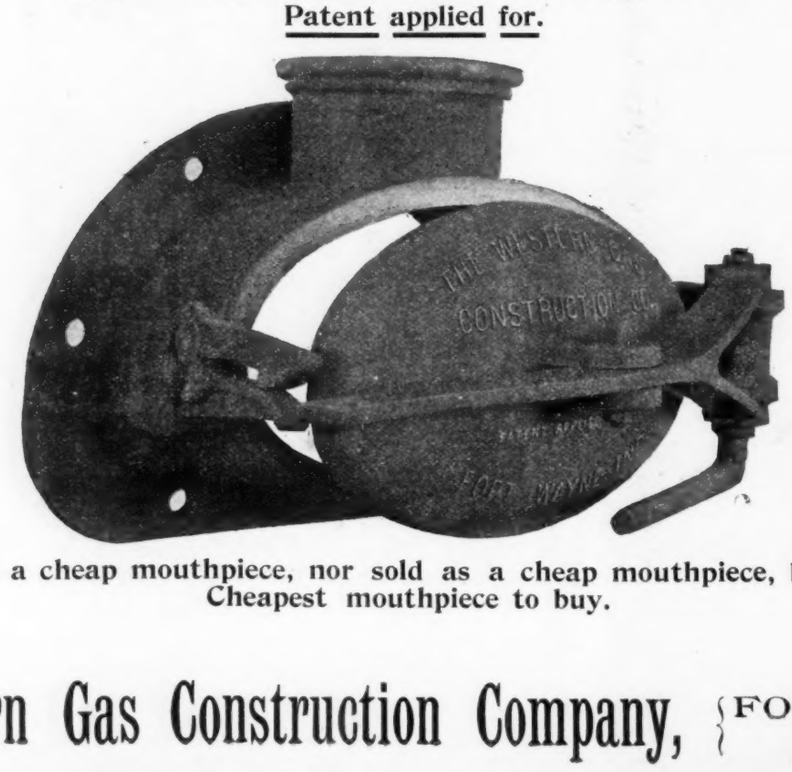

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